

HITACHI

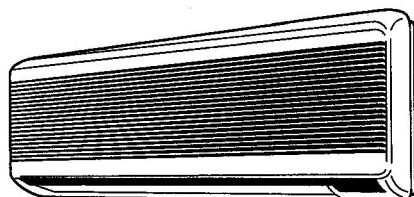
PM**NO. 0073E**

SERVICE MANUAL

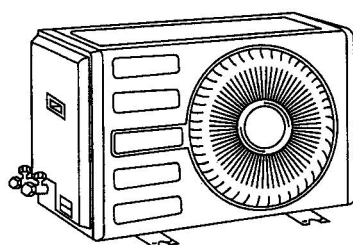
TECHNICAL INFORMATION

RAS-5142CH
RAC-5142CHV/
RAC-5142CHV1/
RAC-5142CHA1

REFER TO THE FOUNDATION MANUAL



RAS-5142CH



RAC-5142CHV
RAC-5142CHV1
RAC-5142CHA1



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SPECIFICATIONS

TYPE			WALL TYPE	
			COOLING UNIT	CONDENSING UNIT
MODEL			RAS-5142CH	RAC-5142CHV/RAC-5142CHV1/RAC-5142CHA1
POWER SOURCE			1Ø, 220 – 240 V, 50 Hz	
COOLING	TOTAL INPUT (W)		1290 – 1430	
	TOTAL AMPERES (A)		6.0 – 6.5	
	CAPACITY	(kW)	3.55 – 3.60	
		(B.T.U./h)	12120 – 12290	
HEATING	TOTAL INPUT (W)		1460 – 1550	
	TOTAL AMPERES (A)		6.8 – 7.0	
	CAPACITY	(kW)	4.50 – 4.65	
		(B.T.U./h)	15360 – 15870	
DIMENSIONS (mm)		W	815	820
		H	298	520
		D	179*(185)	280
NET WEIGHT (kg)			8	38

* After installation

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

ROOM AIR CONDITIONER

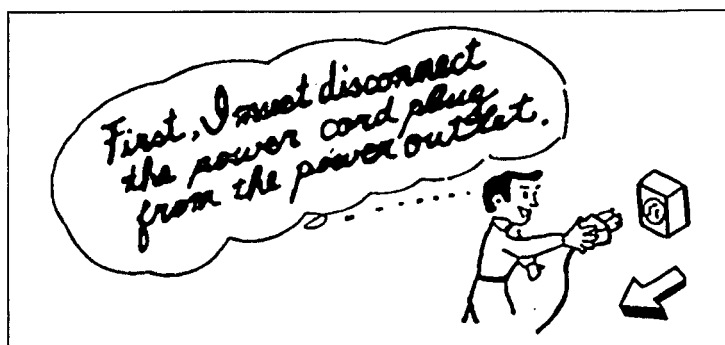
COOLING UNIT + CONDENSING UNIT

APRIL 1997

H.A.P.M.

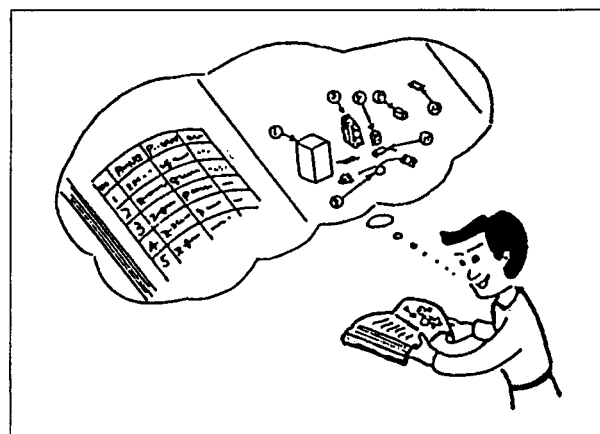
SAFETY DURING REPAIR WORK

1. In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



2. If it is necessary to replace any parts, they should be replaced with respective genuine parts for the unit, and the replacement must be effected in correct manner according to the instructions in the Service Manual of the unit.

If the contacts of electrical parts are defective, replace the electrical parts without trying to repair them.



3. After completion of repairs, the initial state should be restored.
4. Lead wires should be connected and laid as in the initial state.
5. Modification of the unit by the user himself should absolutely be prohibited.
6. Tools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.
7. In installing the unit having been repaired, be careful to prevent the occurrence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.
8. To check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit.
The insulation resistance should be 1 MΩ or more as measured by a 500V DC megger.
9. The initial location of installation such as window, floor or the other should be checked for being safe enough to support the repaired unit again.
If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.
10. Any inflammable thing should never be placed about the location of installation.
11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



PREVENTION OF DAMAGE TO SEMICONDUCTORS

1. When carrying and handling semiconductors adopted in your Model during maintenance and inspection thereof, much care should be taken to prevent the semiconductors from being damaged. Also, such care should be taken when handling any faulty Model which is to be returned to factory.
2. The semiconductors used in your Model are the following :
 - (1) Micro computer
 - (2) Integrated circuits (IC)
 - (3) Field-effect transistors (FET)
 - (4) Printed circuit boards (PC boards) or the like on which the parts in (1) and (2) above are provided
3. Cautions in handling
 - (1) Use a conductive container to carry or store the semiconductive parts. Even if they are faulty ones, also handle them using such container.
 - (2) When parts as uncovered are handled (for counting, packing or for the like purpose), the handler must use his own body as conductor for earthing. For this purpose, put on an electrically conductive ring or bracelet at the wrist. Connect to the bracelet a conductor provided with a resistor of $1\text{ M}\Omega$ and at the other end with a clip for connection to the earth wire.

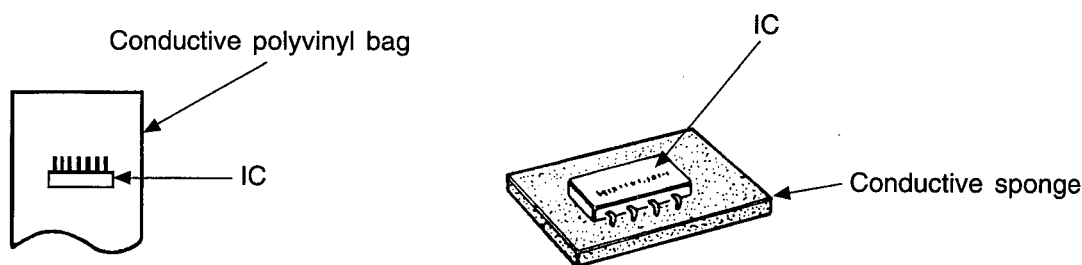


Fig. 1 Conductive Container

- (3) Be careful not to have your clothes be in contact with any part while you are holding it, even if the body earthing is established.
- (4) Be sure to place the parts on a grounded metallic plate.
- (5) Never fail to disconnect the power supply before starting repair of any PC board. Then, proceed to the repair of the PC board on the grounded metallic plate.

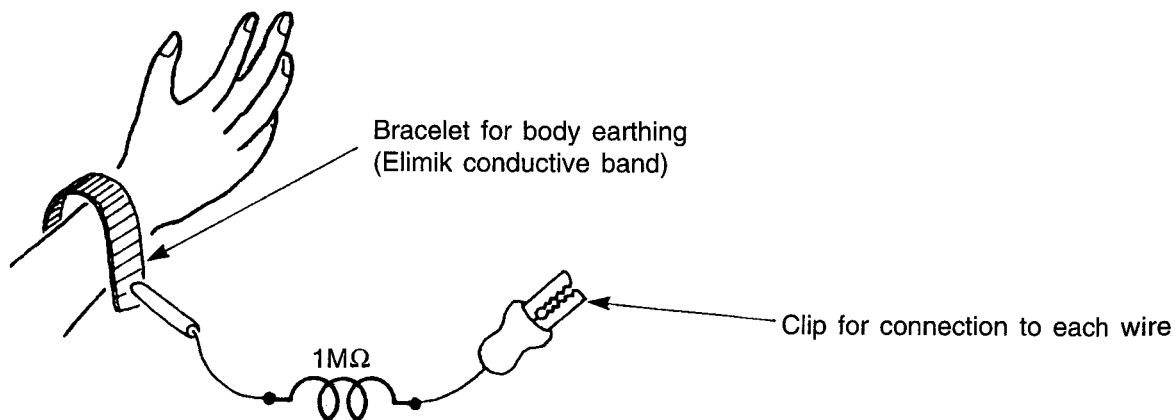


Fig. 2 Body Earthing

(6) Soldering iron to be used should be a one with three wires (including an earth wire).

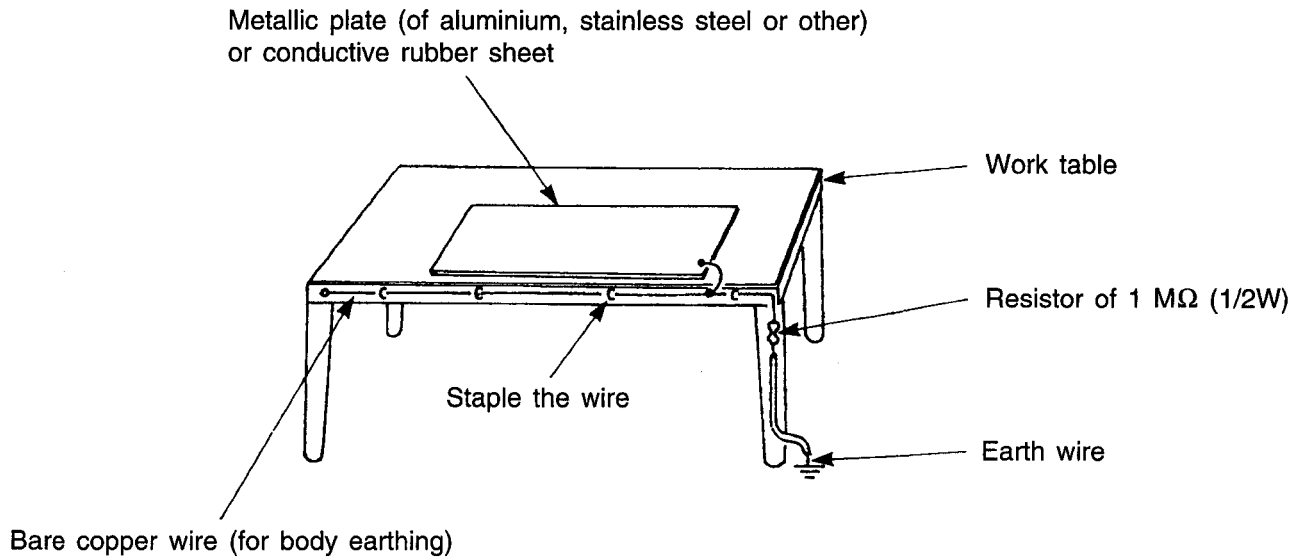


Fig. 3. Earthing of Work Table

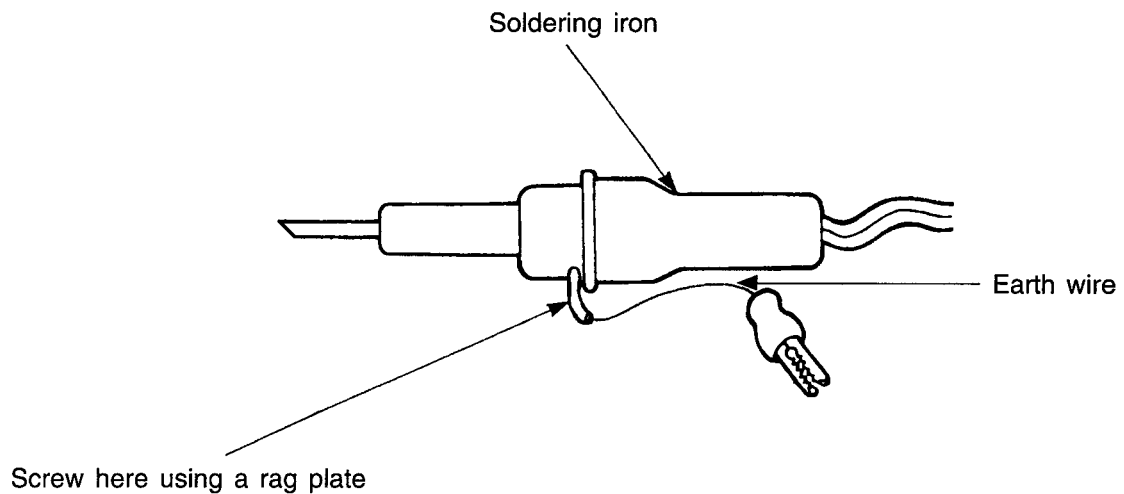


Fig. 4. Earthing of Soldering Iron

An ordinary soldering iron may also be used, but in such case, be sure to provide a perfect insulation ($10\text{M}\Omega$ or more to 100volts).

(7) While checking the circuits during maintenance, inspection or the other, strictly avoid any shortcircuiting of the load circuit or other by the test probe of the measuring instrument.

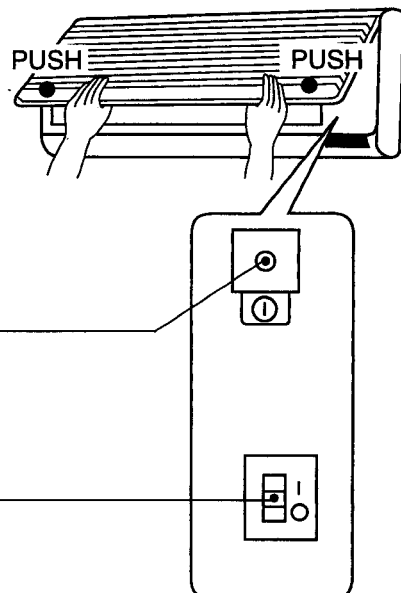
SPECIFICATIONS

MODEL		RAS-5142CH	RAC-5142CHV	RAC-5142CHV1	RAC-5142CHA1
FAN MOTOR		14 W	20 W	20 W	20 W
FAN MOTOR CAPACITOR		1 μ F, 450V	2.5 μ F, 400V	2.5 μ F, 400V	2.5 μ F, 400V
FAN MOTOR PROTECTOR		YES	YES (INTERNAL)	YES (INTERNAL)	YES (INTERNAL)
COMPRESSOR		NO	H933RB1	SH933RC2-U	SH933RC2-U
COMPRESSOR MOTOR CAPACITOR		NO	35 μ F, 440V	35 μ F, 440V	35 μ F, 440V
OVERLOAD PROTECTOR		NO	YES	YES (INTERNAL)	YES (INTERNAL)
PROTECTOR		NO	YES	YES (INTERNAL)	YES (INTERNAL)
FUSE (for MICRO COMPUTER)		3.0A	NO	NO	NO
POWER RELAY		MQ4	NO	NO	NO
POWER SWITCH		YES	NO	NO	NO
TEMPORARY SWITCH		YES	NO	NO	NO
SERVICE SWITCH		YES	NO	NO	NO
TRANSFORMER		YES	NO	NO	NO
VARISTOR		450NR	NO	NO	NO
NOISE SUPPRESSOR		NO	NO	NO	NO
SOLID STATE RELAY FOR FAN (FAN SSR)		S26MD02	NO	NO	NO
EXTERNAL FAN AND REVERSING VALVE RELAY		G4U	NO	NO	NO
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES	NO	NO	NO
THERMOSTAT		YES (IC)	NO	NO	NO
FUSE CAPACITY		15 A TIME DELAY FUSE			
REFRIGERANT CHARGING VOLUME (Refrigerant 22)	UNIT	-----	* 1,080g	* 1,080g	* 1,080g
	PIPES	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE. P-103VK1 (3m), P-105VK1 (5m), P-108VK1 (8m), (P-103VK), (P-105VK)			

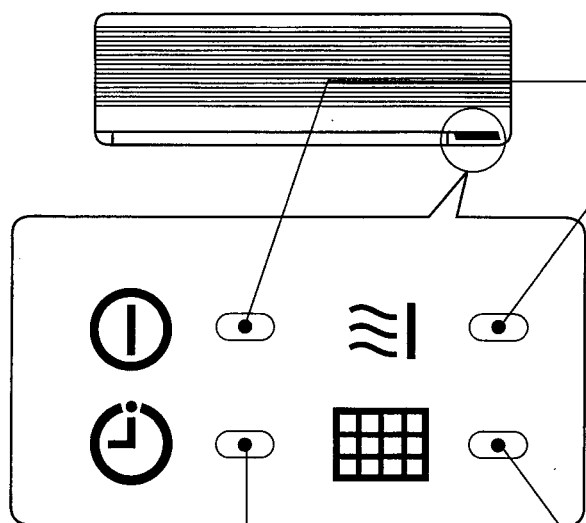
* 1080g for piping set of 5 ~ 8m, additional 25g/m R22 is required for additional 8m onward, but cannot exceed 10m.

INDOOR UNIT CONTROL PANEL

- Press the mark "PUSH" on the left and right sides of the suction grille to open it.
- After the work is finished, slightly lift the suction grille and then close it. Press the mark "PUSH" on the left and right sides of the suction grille to fix it securely.
- **TEMPORARY SWITCH** — Use this switch to start and stop when the remote controller does not work. Normally do not use this button.
- **POWER SWITCH** —



INDOOR UNIT INDICATORS



- **OPERATION lamp**
This lamp lights during operation.
- **HOT KEEP lamp**
This lamp lights in the following cases during heating. While this is lit, heated air will not come out of the cooling unit.
 - (1) **During preheating**
For about 2-3 minutes after start up.
 - (2) **During defrosting**
Defrosting will be performed about once an hour when frost forms on the heat exchanger of the condensing unit, for 5-10 minutes each time.
 - (3) **When the preset temperature has been reached.**
Heating operation will stop when the room temperature has risen to the preset value.
 - (4) **During AUTO FRESH defrosting**
- **TIMER lamp**
This lamp lights when the timer is working.
- **FILTER lamp**
When the device is operated for a total of about 100 hours, the FILTER lamp lights to indicate that it is the time to clean the filter. The lamp goes out when the FILTER button on the remote controller is pressed.

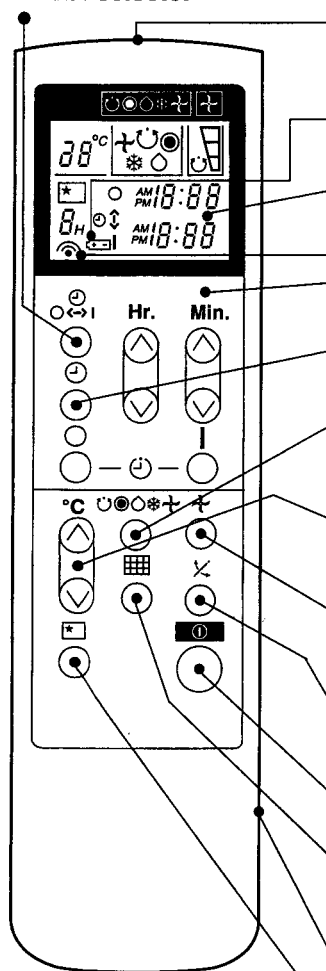
NAMES AND FUNCTIONS OF EACH PART

REMOTE CONTROLLER

This controls the operation of the indoor unit. The range of control is about 7 meters. If indoor lighting is controlled electronically, the range of control may be shorter.

This unit can be fixed on a wall using the fixture provided. Before fixing it, make sure the indoor unit can be controlled from the remote controller.

TIMER selector



Signal emitting window/transmission sign

Point this window toward the indoor unit when controlling it. The transmission sign blinks when a signal has been sent.

Battery warning sign

Replace the battery when this is blinking.

Display

This indicates the room temperature selected, current time, timer status, function and intensity of circulation selected.

Timer controls

Use these buttons to set the timer.

TIME button

Use this button to set and check the current time.

FUNCTION selector

Use this button to select the operating mode. Every time you press it, the mode will change from (AUTO) to (HEAT) to (DEHUMIDIFY) to (COOL) and to (FAN) cyclically.

TEMPERATURE buttons

Use these buttons to raise or lower the temperature setting. (Keep pressed, and the value will change more quickly.)

FAN SPEED selector

This determines the fan speed. Every time you press this button, the intensity of circulation will change from (AUTO) to (HI) to (MED) to (LOW) (during the (FAN) mode, from HI to MED to LOW).

AUTO SWING button

Controls the angle of the horizontal air deflector.

START/STOP button

Press this button to start operation. Press it again to stop operation.

FILTER button

Press this button when you have cleaned the filter. About 100 hours after this, the FILTER lamp will light to indicate that it is the time to clean the filter again.

Battery compartment (at the back)

The batteries are in here.

SLEEP button

Use this button to set the sleep timer.

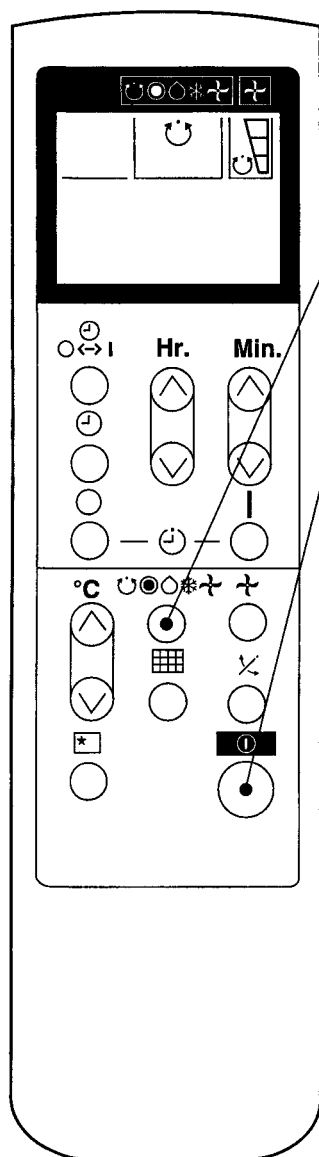
	AUTO
	HEAT
	DEHUMIDIFY
	COOL
	FAN
	FAN SPEED HI MED LOW
	SLEEPING
	STOP (CANCEL)
	START (RESERVE)
	START/STOP
	TIME
	TIMER SET
	TIMER SELECTOR
	FILTER RESET
	HOT KEEP
	AUTO SWING


Precautions for Use

- Do not put the remote controller in the following places.
 - In direct sunlight.
 - In the vicinity of a heater.
- Handle the remote controller carefully. Do not drop it on the floor, and protect it from water.
- Once the outdoor unit stops, it will not restart for about 3 minutes (unless you turn the power switch off and on or unplug the power cord and plug it in again).
This is to protect the device and does not indicate a failure.
- If you press the FUNCTION selector button during operation, the device may stop for about 3 minutes for protection.

AUTOMATIC OPERATION

The device will automatically determine the mode of operation, HEAT, COOL, or Dehumidify, depending on the initial room temperature. The selected mode of operation will not change when the room temperature varies.



Press the FUNCTION selector so that the display indicates the  (AUTO) mode of operation.

- When AUTO has been selected, the device will automatically determine the mode operation, HEAT, COOL, or Dehumidify, depending on the current room temperature.
- The FAN SPEED selector does not work at this time: the FAN SPEED is AUTO during HEAT and COOL, and LOW during DEHUMIDIFY.

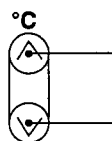
Press the  (START/STOP) button.

Operation starts with a beep.

Press the button again to stop operation.

- As the settings are stored in memory in the remote controller, you only have to press the  (START/STOP) button next time.

You can raise or lower the temperature setting as necessary by a maximum of 3°C.



Press and the temperature setting will change by 1°C each time.

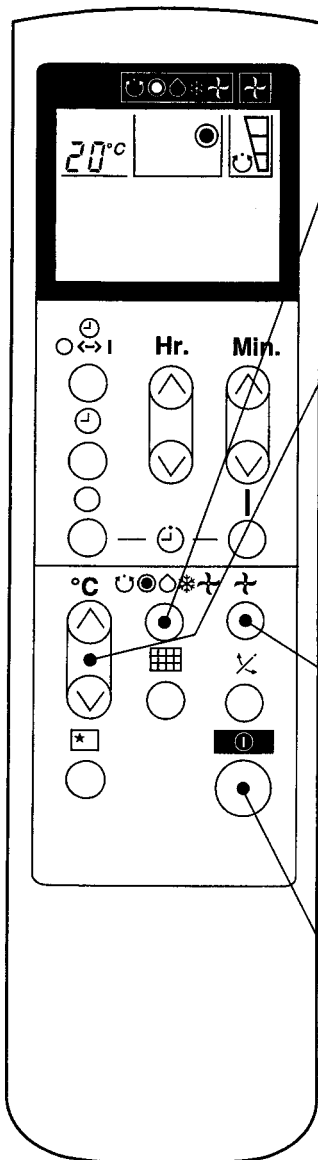
- The preset temperature and the actual room temperature may vary somewhat depending on conditions.
- The display does not indicate the preset temperature in the AUTO mode. If you change the setting, the cooling unit will produce a beep.


■ Condition of Automatic Operation


Initial room temperature (approx.)	Function	Temperature setting	FAN SPEED
Over 27°C	➡ COOL	27°C	HI at start, MED or LOW after the preset temperature is reached
23~27°C	➡ DEHUMIDIFY	Slightly lower than the room temperature	LOW
Under 23°C	➡ HEAT	23°C	HI at start, MED or LOW after the preset temperature is reached






HEATING OPERATION


Use the device for heating when the outdoor temperature is under 21°C. When it is warm (over 21°C), the heating function may not work in order to protect the device.




1 Press the FUNCTION selector so that the display indicates the  (HEAT).



2 Set the desired room temperature with the TEMPERATURE buttons (the display indicates the setting).
 The range of 18-22°C is recommended as the room temperature for heating. If the temperature setting is 20°C, the room temperature will be controlled at around 20°C.
 The temperature setting and the actual room temperature may vary somewhat depending on conditions.

3 Set the desired FAN SPEED with the  (FAN SPEED) button (the display indicates the setting).
 (AUTO): The FAN SPEED is HI at first and varies to MED or LOW automatically when the preset temperature has been reached.
 (HI) : Economical as the room will become warm quickly. But you may feel a chill at the beginning.
 (MED) : Quiet.
 (LOW) : More quiet.
 Heating operation starts with LOW to prevent the emission of cold air even if you select HI or MED.

START STOP Press the  (START/STOP) button. Heating operation starts with a beep. Press the button again to stop operation.

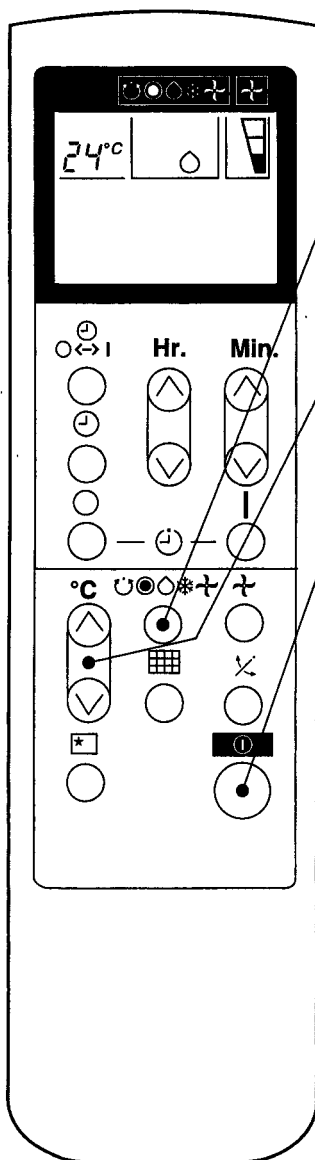
■ As the settings are stored in memory in the remote controller, you only have to press the  (START/STOP) button next time.

Auto Fresh Defrosting will work in the following cases:

Auto Fresh Defrosting will start when heating operation has stopped with the  (START/STOP) button pressed, during the off-timer operates or when the outdoor heat exchanger is cold. This defrosting will last for 5-10 minutes, indicated by lighting of the  (HOT KEEP) lamp.

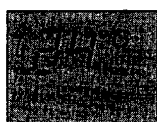
DEHUMIDIFYING OPERATION

Use the device for dehumidifying when the room temperature is over 16°C. When it is under 15°C, the dehumidifying function will not work.



1 Press the FUNCTION selector so that the display indicates the ○ (DEHUMIDIFY).
The FAN SPEED is set at LOW automatically.
The FAN SPEED button does not work.

2 Set the desired room temperature with the TEMPERATURE buttons (the display indicates the setting).



The range of 20-26°C is recommended as the room temperature for dehumidifying.

**START
STOP**

Press the ① (START/STOP) button. Dehumidifying operation starts with a beep. Press the button again to stop operation.

- As the settings are stored in memory in the remote controller, you only have to press the ① (START/STOP) button next time.

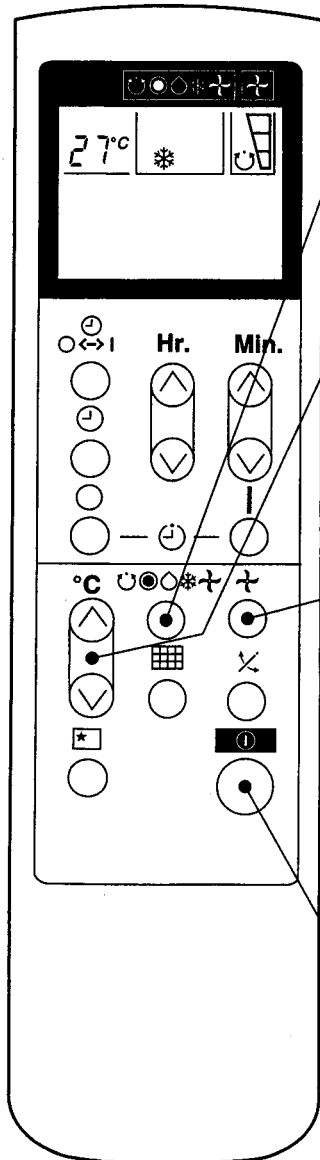
■ Dehumidifying Function

When the room temperature is higher than the temperature setting: The device will dehumidify the room, reducing the room temperature to the preset level.

When the room temperature is lower than the temperature setting: Dehumidifying will be performed with the room temperature set slightly lower than the current room temperature, whatever the temperature setting. The function will stop (the indoor unit will stop emitting air) as soon as the room temperature becomes lower than the setting.

COOLING OPERATION

Use the device for cooling when the outdoor temperature is 22-42°C. If humidity is very high (over 80%) indoors, some dew may form on the air outlet grille of the indoor unit.



1

Press the FUNCTION selector so that the display indicates * (COOL).

2

Set the desired room temperature with the TEMPERATURE buttons (the display indicates the setting).



The range of 25-28°C is recommended as the room temperature for cooling. If the temperature setting is 27°C, the room temperature will be controlled at around 27°C.

The temperature setting and the actual room temperature may vary somewhat depending on conditions.

3

Set the desired FAN SPEED with the FAN SPEED button (the display indicates the setting).

(AUTO): The FAN SPEED is HI at first and varies to MED or LOW automatically when the preset temperature has been reached.

(HI) : Economical as the room will become cool quickly.

(MED) : Quiet.

(LOW) : More quiet.

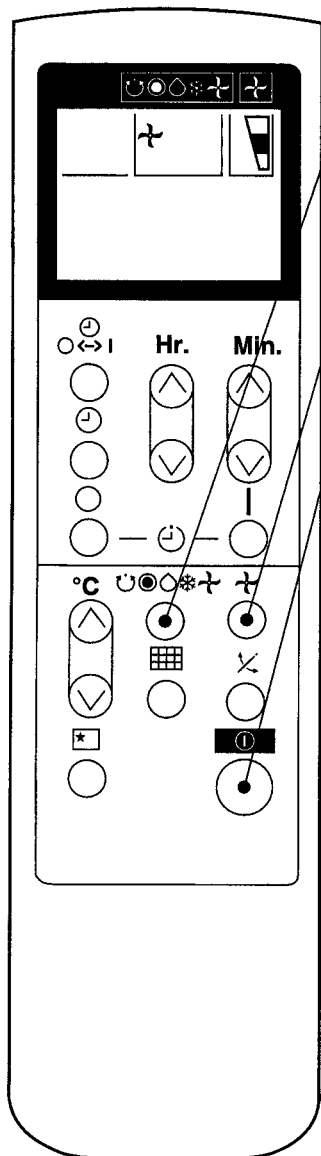
**START
STOP**

Press the ① (START/STOP) button. Cooling operation starts with a beep. Press the button again to stop operation. The cooling function does not start if the temperature setting is higher than the current room temperature (even though the ① (OPERATION) lamp lights). The cooling function will start as soon as you set the temperature below the current room temperature.


■ As the settings are stored in memory in the remote controller, you only have to press the ① (START/STOP) button next time.

FAN OPERATION

You can use the device simply as an air circulator. Use this function to dry the interior of the indoor unit at the end of summer.




1

Press the FUNCTION selector so that the display indicates  (FAN).

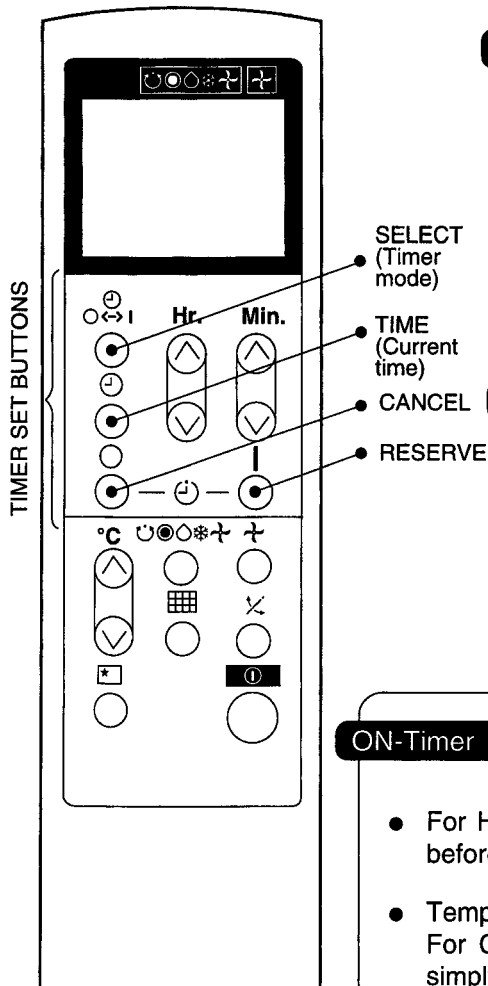
2

Press the FAN SPEED button and select the desired FAN SPEED (the display indicates your choice).

**START
STOP**

Press the  (START/STOP) button. Fan operation starts with a beep. Press the button again to stop operation.

HOW TO SET THE TIMER



Setting the Current Time

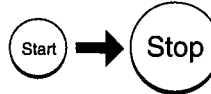
After you change the batteries;

1 Press the (TIME) button.



OFF-Timer

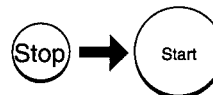
1 Press the (SELECT) button until the (OFF) mark blinks on the display.



You can set the device to turn off at the preset time.



ON-Timer

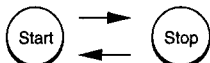


1 Press the (SELECT) button until the (ON) mark blinks on the display.

- For Heating, the device will turn on before the set time.
- Temperature be reached at the designated time. For Cooling and Dehumidifying, the device will simply turn on at the designated time.

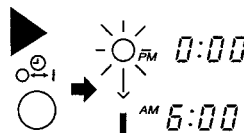


ON/OFF-Timer

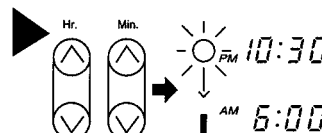


- The device will turn on (off) and off (on) at the designated times.
- The switching occurs first at the preset time that comes earlier.
- The arrow mark appearing on the display indicates the sequence of switching operations.

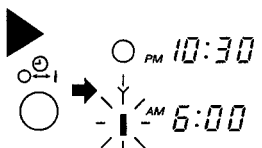
1 Press the (SELECT) button so that the (OFF) mark blinks and the (ON) mark lights in the display.



2 Set the turn-off time with the HOURS and MINUTES buttons.



3 Press the (SELECT) button so that the (OFF) mark lights and the (ON) mark blinks.



How to Cancel Reservation

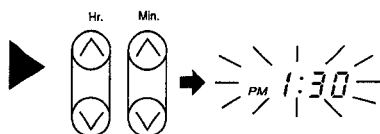
Point the signal window of the remote controller toward the indoor unit, and press the (CANCEL) button.

The (RESERVED) sign goes out with a beep and the (TIMER) lamp turns off on the indoor unit.

CAUTION

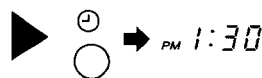
You can see only one of the OFF-timer, ON-timer and ON/OFF-timer.

2 Set the current time with the HOURS and MINUTES buttons.



Example: The current time is 1:30 p.m.

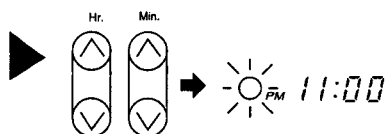
3 Press the TIME button again. The time indication starts lighting instead of flashing.



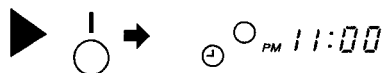
The setting of the current time is now complete.

- The time indication will disappear automatically in 10 seconds.
- To check the current time setting, press the TIME button twice.

2 Set the turn-off time with the HOURS and MINUTES buttons.



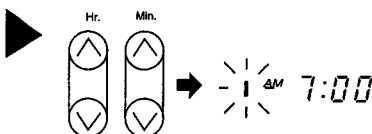
3 Point the signal window of the remote control toward the indoor unit, and press the **I** (RESERVE) button. The **O** (OFF) mark starts lighting instead of flashing and the sign **⊖** (RESERVED) lights. A beep occurs and the **⊖** (TIMER) lamp lights on the indoor unit.



Example: The device will turn off at 11:00p.m.

The setting of turn-off time is now complete.

2 Set the turn-on time with the HOURS and MINUTES buttons.

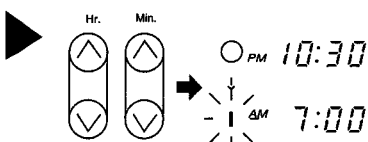


3 Point the signal window of the remote controller toward the indoor unit, and press the **I** (RESERVE) button. The **I** (ON) mark starts lighting instead of flashing and the **⊖** (RESERVED) sign lights. A beep occurs and the **⊖** (TIMER) lamp lights on the indoor unit.

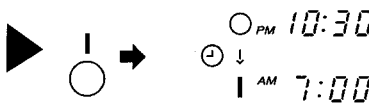


Example:
The device will turn on, early so that the preset temperature be almost reached at 7:00 a.m.
The setting of the turn-on time is now complete.

4 Set the turn-on time with the HOURS and MINUTES buttons.




5 Point the signal window of the remote controller toward the indoor unit, and press the **I** (RESERVE) button. The **I** (ON) mark starts lighting instead of flashing and the **⊖** (RESERVED) sign lights. A beep occurs and the **⊖** (TIMER) lamp lights on the indoor unit.

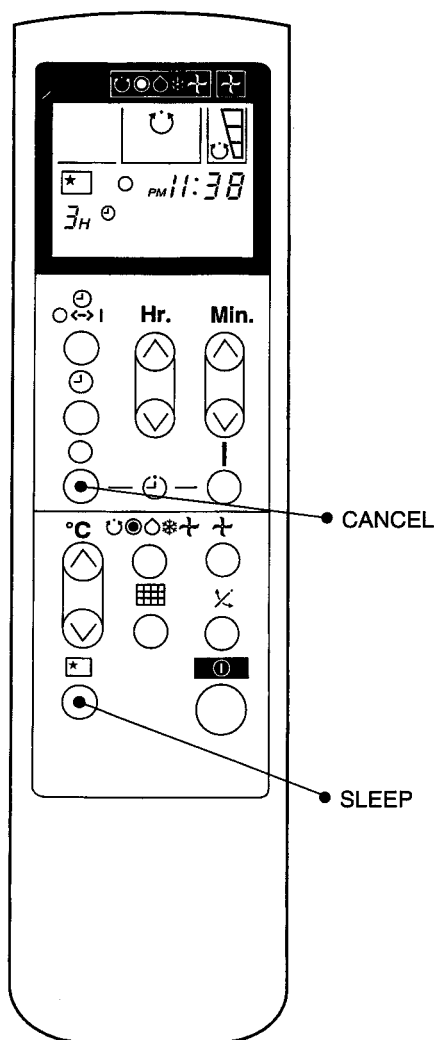


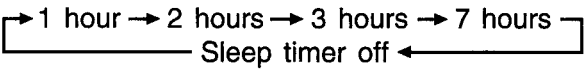
Example:
For heating, the device will turn off at 10:30 p.m., and then turn on early so that the preset temperature be almost reached at 7:00 a.m.; for cooling and dehumidifying, it will simply turned on at 7:00 a.m.
The settings of the turn-on/off times are now complete.

- The timer may be used in three ways: off-timer, on-timer, and ON/OFF (OFF/ON)-timer. Set the current time at first because it serves as a reference.
- As the time settings are stored in memory in the remote control unit, you only have to press the **I** (RESERVE) button in order to use the same settings next time.
- ON-Timer : The device will turn on before the preset time. Temperature will be reached at the designated time. Operation starting time varies depending on the conditions such as room temperature, set room temperature, etc.

HOW TO SET THE SLEEP TIMER

Set the current time at first if it is not set before (see the pages for setting the current time). Press the  (SLEEP) button, and the display changes as shown below.

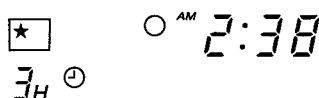


Mode	Indication
Sleep timer	

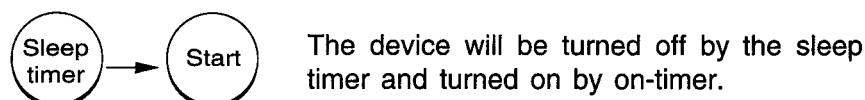
Sleep Timer: The device will continue working for the designated number of hours and then turn off.

Point the signal window of the remote controller toward the indoor unit, and press the SLEEP button.

The timer information will be displayed on the remote controller. The TIMER lamp lights with a beep from the indoor unit. When the sleep timer has been set, the display indicates the turn-off time.

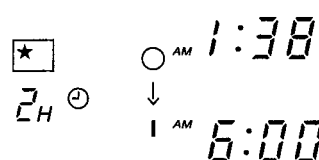


Example: If you set 3 hours sleep time at 11:38 p.m., the turn-off time is 2:38 a.m.



1 Set the ON-timer.


2 Press the  (SLEEP) button and set the sleep timer.



For heating:

In this case, the device will turn off in 2 hours (at 1:38 a.m.) and turn on early so that the preset temperature be almost reached at 6:00 next morning.

How to Cancel Reservation

Point the signal window of the remote controller toward the indoor unit, and press the  (CANCEL) button.

The  (RESERVED) sign goes out with a beep and the  (TIMER) lamp turns off on the indoor unit.

⚠ CAUTION


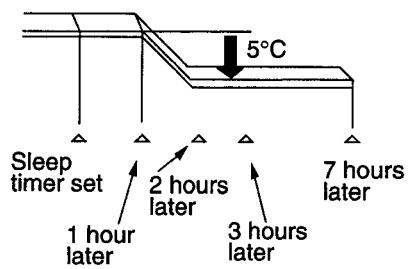


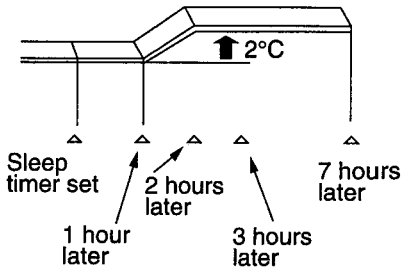

If you set the sleep timer when the off-timer or on/off-timer has been set earlier, the sleep timer becomes effective instead of the off- or on/off-timer set earlier.

Explanation of the sleep timer

The device will control the FAN SPEED and room temperature automatically so as to be quiet and good for people's health.

You can set the sleep timer to turn off after 1, 2, 3 or 7 hours. The FAN SPEED and room temperature will be controlled as shown below.

Operation with the sleep timer

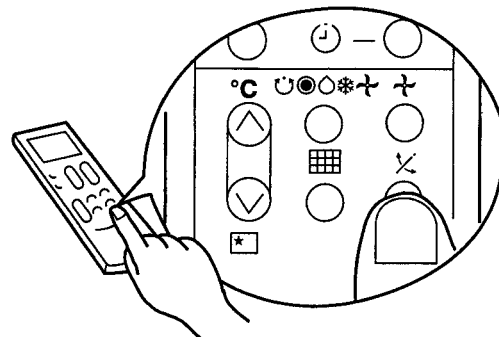
Function	Operation
Heating “  ”	<p>The room temperature will be controlled 5°C below the temperature setting 1 hour after setting of the sleep timer. The FAN SPEED will be set to LOW an hour later.</p>  <p>Sleep timer set 1 hour later 2 hours later 3 hours later 7 hours later</p>
Cooling and dehumidifying “  ” “  ”	<p>The room temperature will be controlled 2°C above the temperature setting 1 hour after the setting of the sleep timer. The FAN SPEED will be set to LOW an hour later.</p>  <p>Sleep timer set 1 hour later 2 hours later 3 hours later 7 hours later</p>
Fan “  ”	<p>The settings of room temperature and circulation are not varied.</p>

ADJUSTING THE AIR DEFLECTOR

1

Adjustment of the conditioned air in the upward and downward directions.

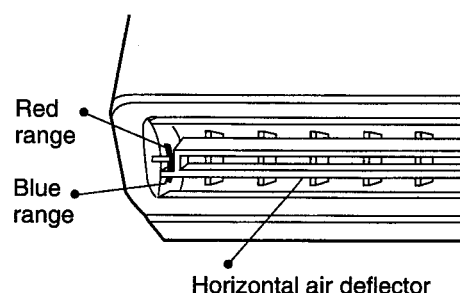
According to "Dehumidifying" or "Cooling" operation, the horizontal air deflector is automatically set to the proper angle suitable for each operation. The deflector can be swung up and down and also set to the desired angle using the "⌵ (AUTO SWING)" button. (If the angle of the deflector is changed, it will not return to the auto-set position after operations start unless the operation mode is switched.)



- If the "⌵ (AUTO SWING)" button is pressed once, the horizontal air deflector swings up and down. If the button is pressed again, the deflector stops in its current position. Several seconds (about 12 seconds) may be required before the deflector starts to move.
- If the deflector is not used at fixed angle, set the horizontal air deflector within range of blue mark on the side plate for "Dehumidifying" and "Cooling" operations.

Also in heating operation, set the horizontal air deflectors within range of red mark.

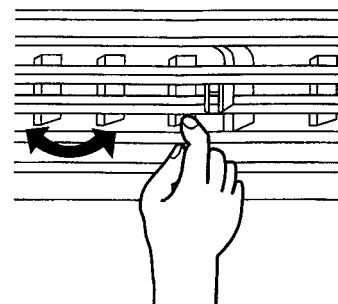
- Swinging the air deflector is effective to reduce unevenness of the temperature in the room.
- In "Cooling" operation, do not set the horizontal air deflector out of the range of blue mark on the side plate and do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and some dew drops may fall from it.
- When the "⌵ (AUTO SWING)" button is pressed while the operation is stopped, the horizontal air deflector moves and stops at the position where the air outlet closes.
- When the auto swing operation is performed, if the horizontal air deflector is moved manually, the swinging range may drift. However, it will return to the original operation range after a short time.




2

Adjustment of the conditioned air to the left and right.

Hold the vertical air deflector as shown in the figure and adjust the conditioned air to the left and right.



HOW TO EXCHANGE THE BATTERIES IN THE REMOTE CONTROLLER

Replace the batteries when the  (battery) mark in the indicator of remote control unit lights.

- 1 Remove the cover as shown in the figure and take out the old batteries.



- 2 Install the new batteries.
The direction of the batteries should match the marks in the case.

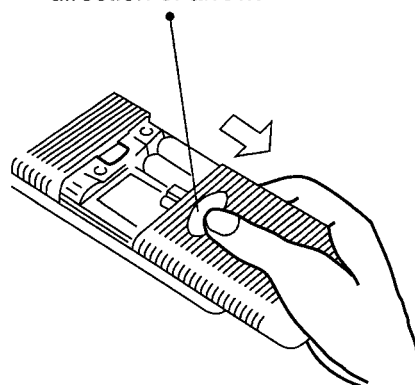


- 3 Press the “⌚ (TIME)” button three times.

⚠ CAUTION

1. Do not use new and old batteries, or different kinds of batteries together.
2. Take out the batteries when you do not use the remote controller for 2 or 3 months.
3. The batteries must be of the LR03 type.

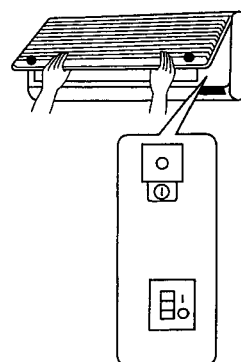
Push and pull to the direction of arrow.



TEMPORARY SWITCH

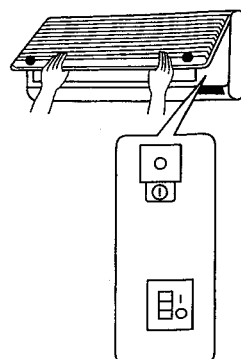
Use the temporary switch when operation can not be done with the remote controller.

1. By pressing the temporary switch, the operation is done in previously set operation mode.
When the operation is done using the temporary switch after the power source is turned off and is turned on again, the operation is done in automatic mode.
2. When the operation is stopped or when the operation is done with the remote controller again, press the temporary switch once again.



POWER SWITCH

When you do not use the room air conditioner, set the power switch to “OFF”.




MAINTENANCE

⚠ CAUTION

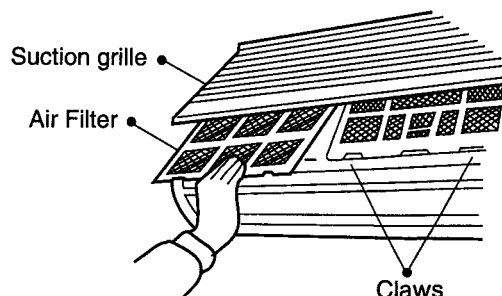
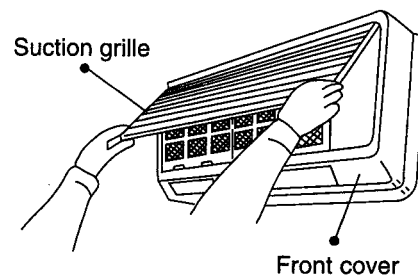
Before the cleaning, stop operation and disconnect the power supply.

Air filter

Clean the air filter, as it removes dust inside the room. It should be washed when the  (FILTER) lamp lights. In case the air filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the filter following the procedure below.

Procedure

- 1** Remove the filter.
 - Press the mark "PUSH" on the left and right sides of the suction grille.
 - Pull the front cover forward (Until the fixed position).
 - Slightly lift the filter and release the claws (2 locations) at the lower part of the front cover and remove the filter from the lower side.
- 2** Remove dust from the filter using a vacuum-cleaner. If there is too much dust, use neutral detergent. After using neutral detergent, wash with clean water and dry in the shade.
- 3** Install the filters. (Set them with "FRONT" mark facing front.)
Slightly lift the suction grille and close as original state. (Press the mark "PUSH" at the left and right sides of the suction grille to fix it securely.)



Note:

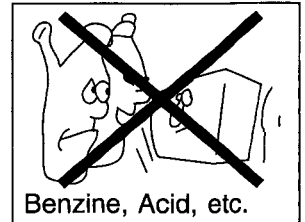
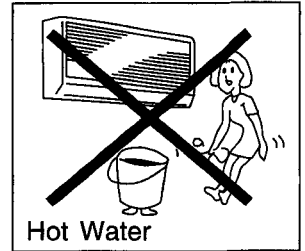
- This model has an air cleaning filter. The cooling capacity is slightly weakened and the cooling speed becomes slower when the air cleaning filter is used. So, set the fan speed to "HIGH" when using it in this condition.
- Recommended to replace the air cleaning filter after every 3 months for normal usage. Type number for this air cleaning filter is <SPX-CFH3>. Please use this number for ordering when you want to renew it.

⚠ CAUTION


- Do not wash with hot water at more than 40°C. The filter may shrink.
- When washing it, shake off moisture completely and dry it in the shade; do not expose it directly to the sun. The filter may shrink.
- Do not operate the air conditioner with the filter removed. Dust may enter the air conditioner and cause trouble.

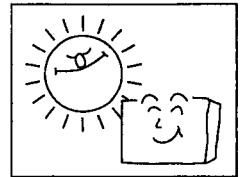
CLEANING OF FRONT COVER, ETC.

1. The front cover easily becomes dirty.
Wipe it with a soft dry cloth.
2. When it is excessively dirty, wipe with a soft cloth soaked in lukewarm water or neutral detergent. Then wipe thoroughly with a soft dry cloth.
3. Never use hot water (above 50°C), benzine, gasoline, acid, thinner or a brush, because they will damage the plastic surface and the coating.



MAINTENANCE AT BEGINNING OF LONG OFF PERIOD

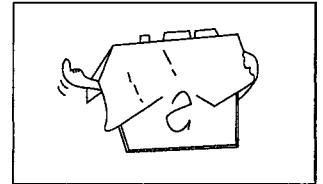
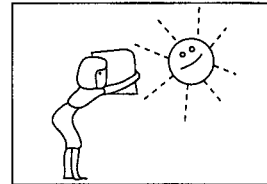
1. Running the unit setting the operation mode to  (FAN) and the fan speed to HI for about half a day on a fine day, and dry the whole of the unit.



WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS.

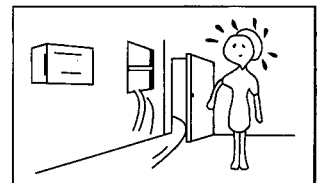
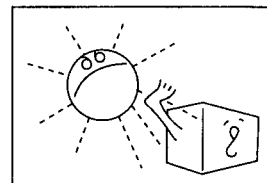
WHEN IT DOES NOT OPERATE

1. Is the fuse all right?
2. Is the voltage extremely high or low?
3. Is the power switch "ON"?



WHEN IT DOES NOT COOL WELL

1. Is the air filter blocked with dust?
2. Does sunlight fall directly on the condensing unit?
3. Is the air flow of the condensing unit obstructed?
4. Are the doors or windows opened, or is there any source of heat in the room?
5. Is the set temperature suitable?



Notes

- In quiet operation or stopping the running, the following phenomena may occasionally occur, but they are not abnormal for the operation.
 - (1) Slight flowing noise of refrigerant in the refrigerating cycle.
 - (2) Slight rubbing noise from the fan casing which is cooled and then gradually warmed as operation stops.
- The odor will possibly be emitted from the room air conditioner because the various odor, emitted by smoke, foodstuffs, cosmetics and so on, sticks to it. So please clean the air filter and the evaporator at the beginning of the season to reduce the odor.

This appliance complies with E. E. C. directive No. 87/308 relative to radio perturbation and interference suppression.

SERVICE SWITCH

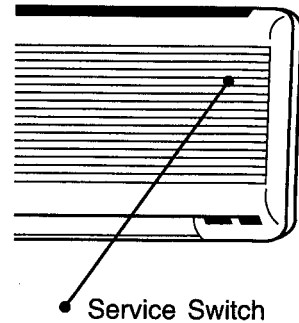
- (1) Confirm the Service switch is set to the "NORMAL" position.

The knob can be used for cooling operation continuously as a temporary measure.

The knob should be set to the upper position normally.

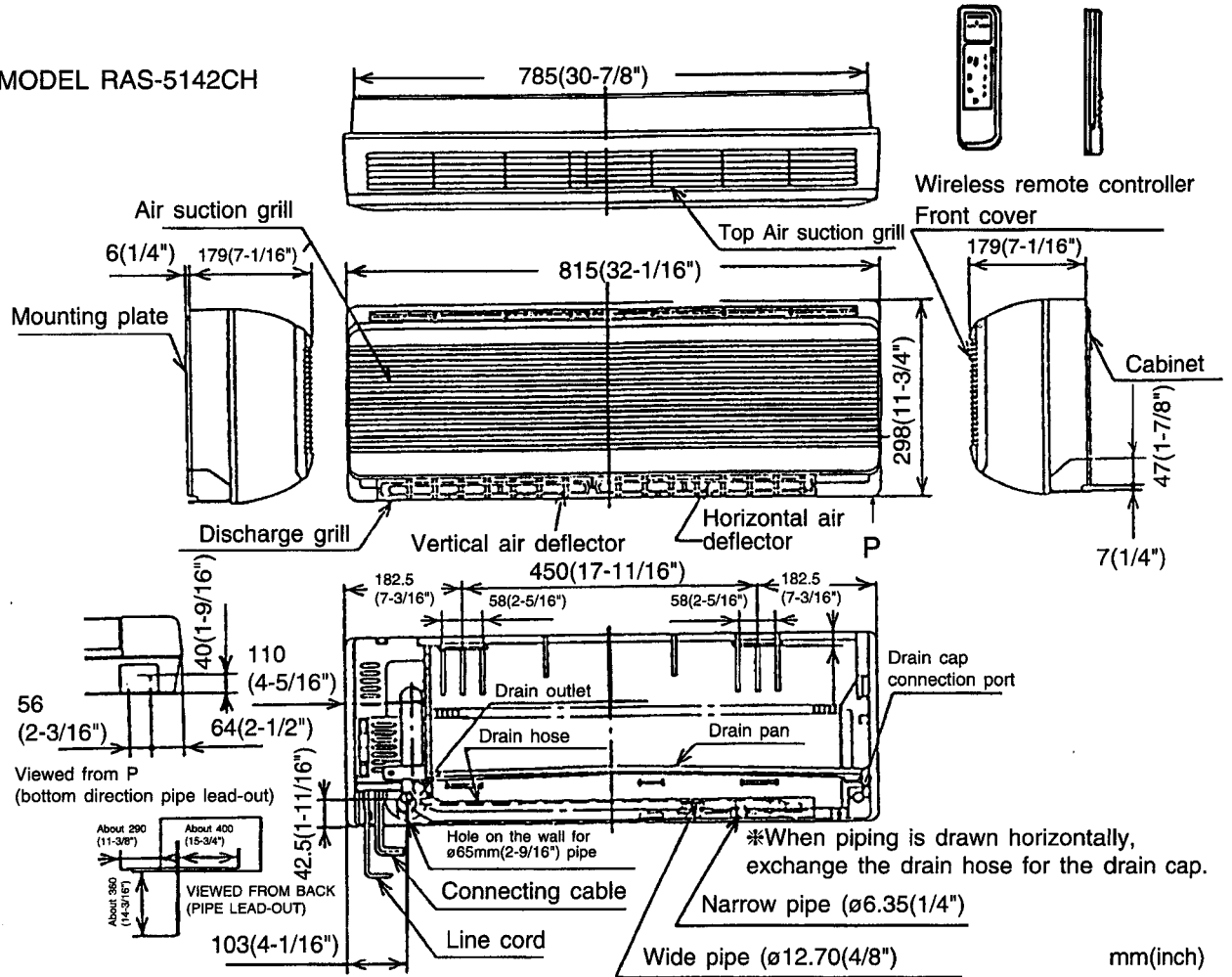
- (2) When room air conditioner cannot be operated in spite of pressing the ON/OFF button and confirming the position of each knob on the remote control switch, this service switch can be used for cooling operation until a service engineer arrives. But in this case the cooling operation is continuous, be careful of not to make the room too cool.

- When cooling operation, set the knob to under position.

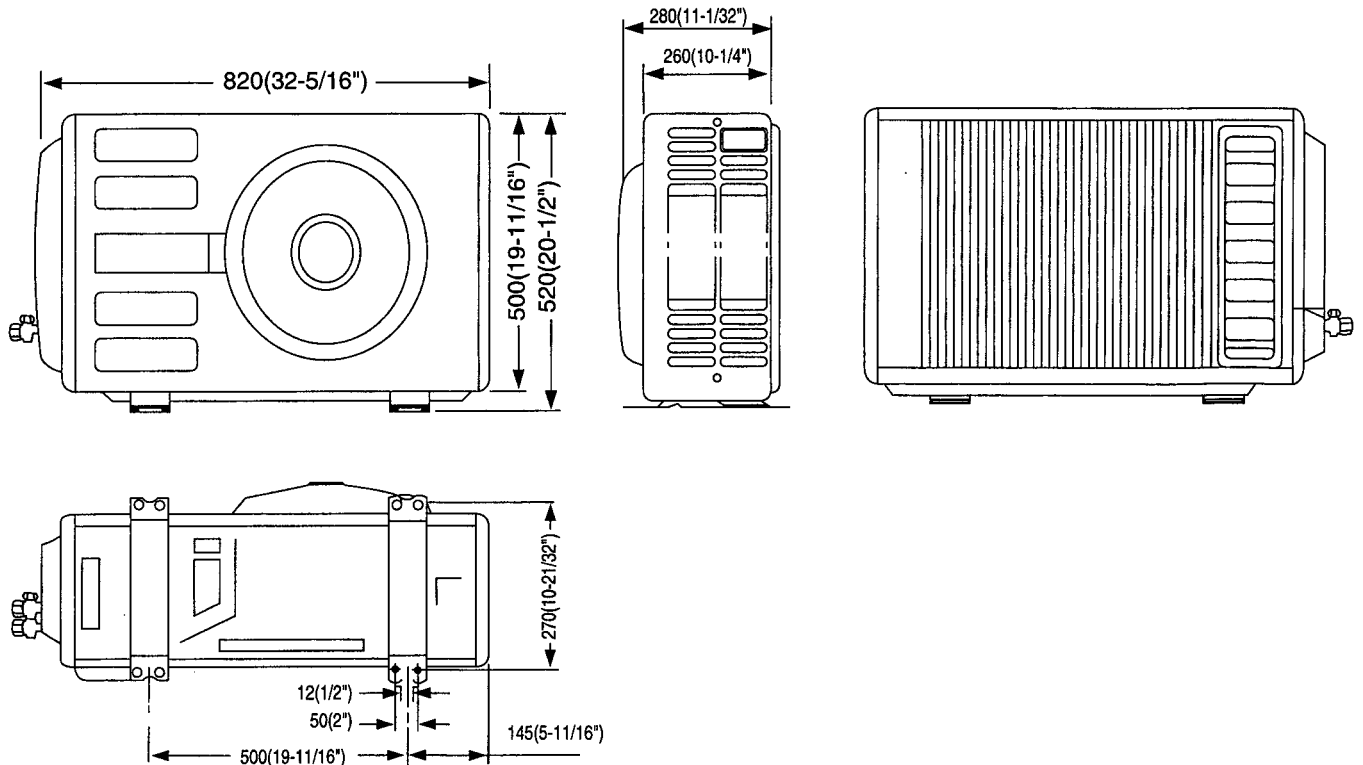


CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAS-5142CH



MODEL RAC-5142CHV/RAC-5142CHV1/RAC-5142CHA1



MAIN PARTS COMPONENT

THERMOSTAT

Thermostat Specifications

MODEL			RAS-5142CH	
THERMOSTAT MODEL			IC	
OPERATION MODE			COOL	HEAT
TEMPERATURE °C (°F)	INDICATION 16	ON	17.6 (63.7)	19.6 (67.3)
		OFF	17.3 (63.1)	19.3 (66.7)
	INDICATION 24	ON	25.6 (78.1)	27.6 (81.7)
		OFF	25.3 (77.5)	27.3 (81.1)
	INDICATION 32	ON	33.6 (92.5)	35.6 (96.1)
		OFF	33.3 (91.9)	35.3 (95.5)

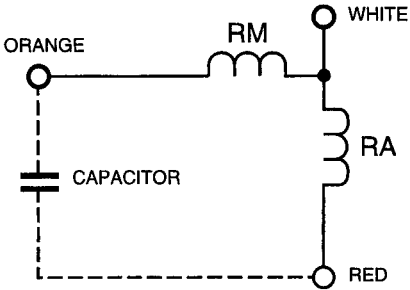
FAN MOTOR

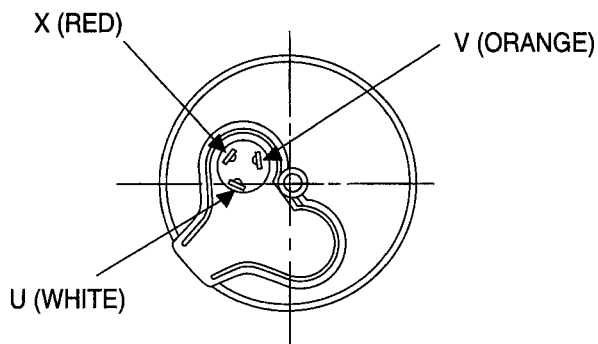
Fan Motor Specifications

MODEL		RAS-5142CH	RAC-5142CHV
PHASE		SINGLE	
RATED VOLTAGE		220 – 240 V	
RATED FREQUENCY		50Hz	
OUT PUT		14W	20W
POLE NUMBER		2	6
CONNECTION			
RESISTANCE VALUE (Ω)	20°C (68°F)	RM = 213.21 RA2 = 30.35 RA1 = 46.10 RA3 = 139.91	RA = 165.20 RM = 334.10
	75°C (167°F)	RM = 259.30 RA2 = 36.91 RA1 = 56.10 RA3 = 170.14	RA = 200.90 RM = 406.30

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-5142CHV
COMPRESSOR MODEL		G533QB3Z
PHASE		SINGLE
RATED VOLTAGE		220 – 240 V
RATED FREQUENCY		50 Hz
LOCKED ROTOR CURRENT		36 A
POLE NUMBER		2
CONNECTION		
RESISTANCE VALUE (Ω)	20°C (68°F)	RA = 2.057 RM = 4.510
	75°C (167°F)	RA = 2.502 RM = 5.485

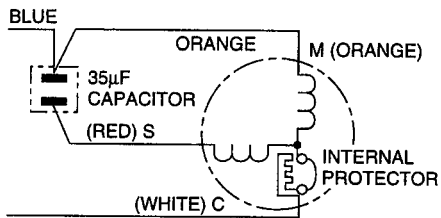


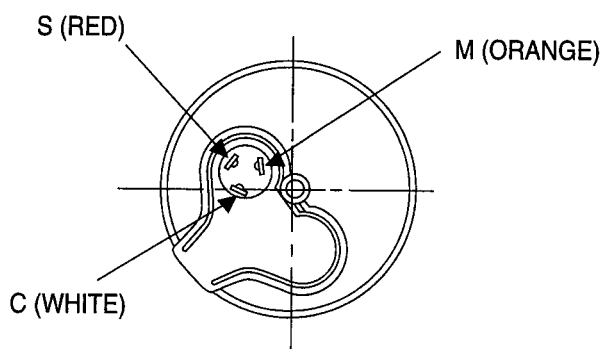
CAUTION

When the Air Conditioner has been operated for a long time with the capillary tubes clogged or crushed or with too little coolant, check the color of the refrigerant oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-5142CHV1/RAC-5142CHA1	
COMPRESSOR MODEL		SH933RC2-U	
PHASE		SINGLE	
RATED VOLTAGE		220 – 240 V	
RATED FREQUENCY		50 Hz	
LOCKED ROTOR CURRENT		27 A	
POLE NUMBER		2	
CONNECTION			
RESISTANCE VALUE (Ω)	20°C (68°F)	RA = 3.12 RM = 2.34	
	75°C (167°F)	RA = 3.79 RM = 2.84	



⚠ CAUTION

When the Air Conditioner has been operated for a long time with the capillary tubes clogged or crushed or with too little coolant, check the color of the refrigerant oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

WIRING DIAGRAM

MODEL RAS-5142CH / RAC-5142CHV

- | | |
|-----------------------------|---|
| (A) : COMPRESSOR | (P) : POWER RELAY |
| (B) : FAN MOTOR | (Q) : THERMAL FUSE |
| (C) : POWER SWITCH | (R) : SURGE ABSORBER |
| (D) : 1,000 PF CAPACITOR | (S) : THERMISTOR |
| (F) : 1 μ F CAPACITOR | (T) : TRANSFORMER |
| (G) : 35 μ F CAPACITOR | (U) _H : OVER HEAT PROTECTOR |
| (H) : 2.5 μ F CAPACITOR | (U) _P : OVERLOAD RELAY |
| (I) : FAN MOTOR PROTECTOR | (V) : VARISTOR |
| (J) : TERMINAL BOARD | (W) : SOLID STATE RELAY FOR FAN (FAN SSR) |
| (K) : LINE CORD | (X) : FUSE |
| (L) : EXTERNAL FAN RELAY | (Y) : REVERSING VALVE RELAY |
| (M) : STICK RELAY | (Z) : AUTO SWEEP MOTOR |
| (N) : REVERSING VALVE | |

BLU : BLUE

YEL : YELLOW

BRN : BROWN

WHT : WHITE

GRY : GRAY

ORN : ORANGE

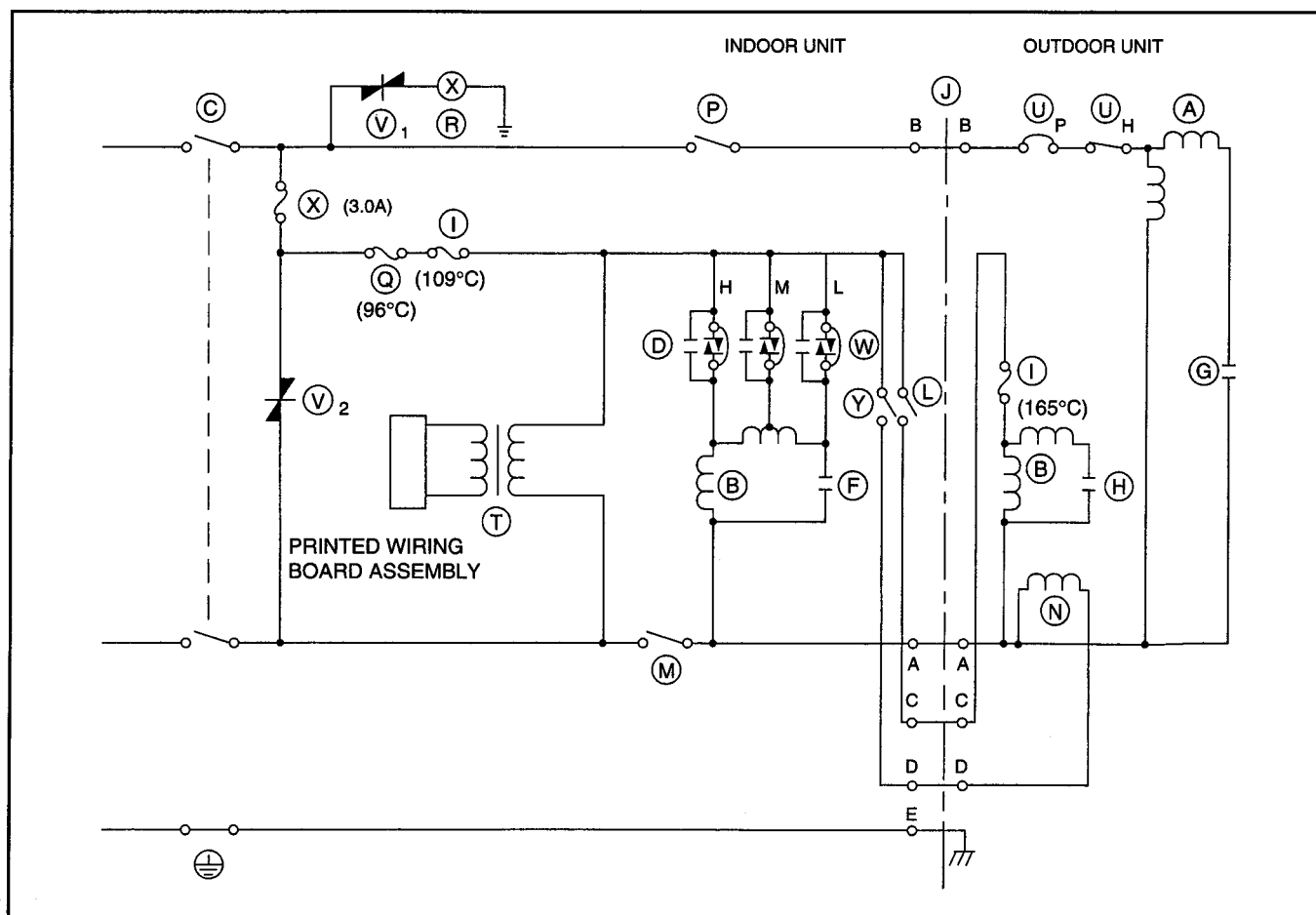
GRN : GREEN

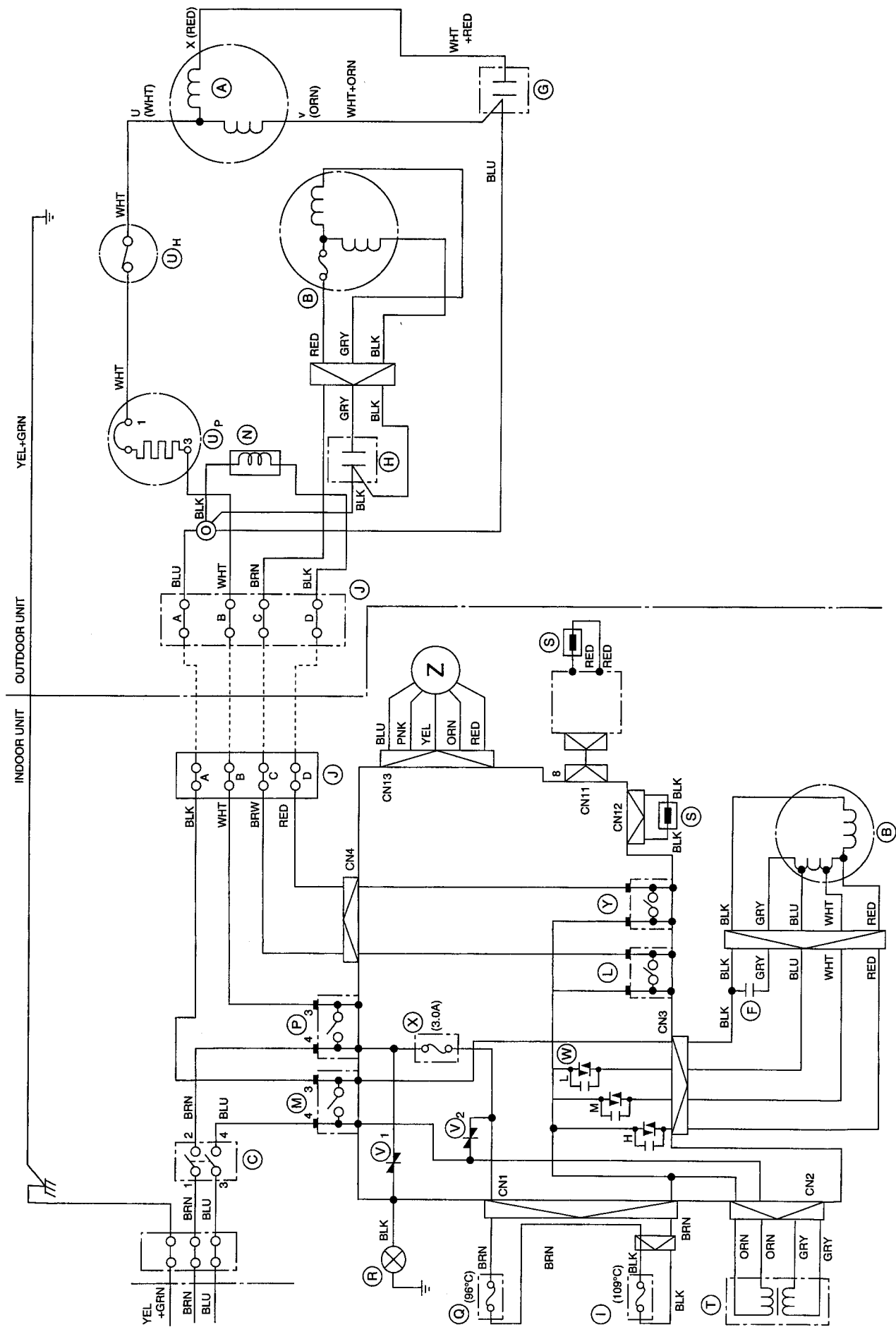
RED : RED

BLK : BLACK

PNK : PINK

VIO : VIOLET



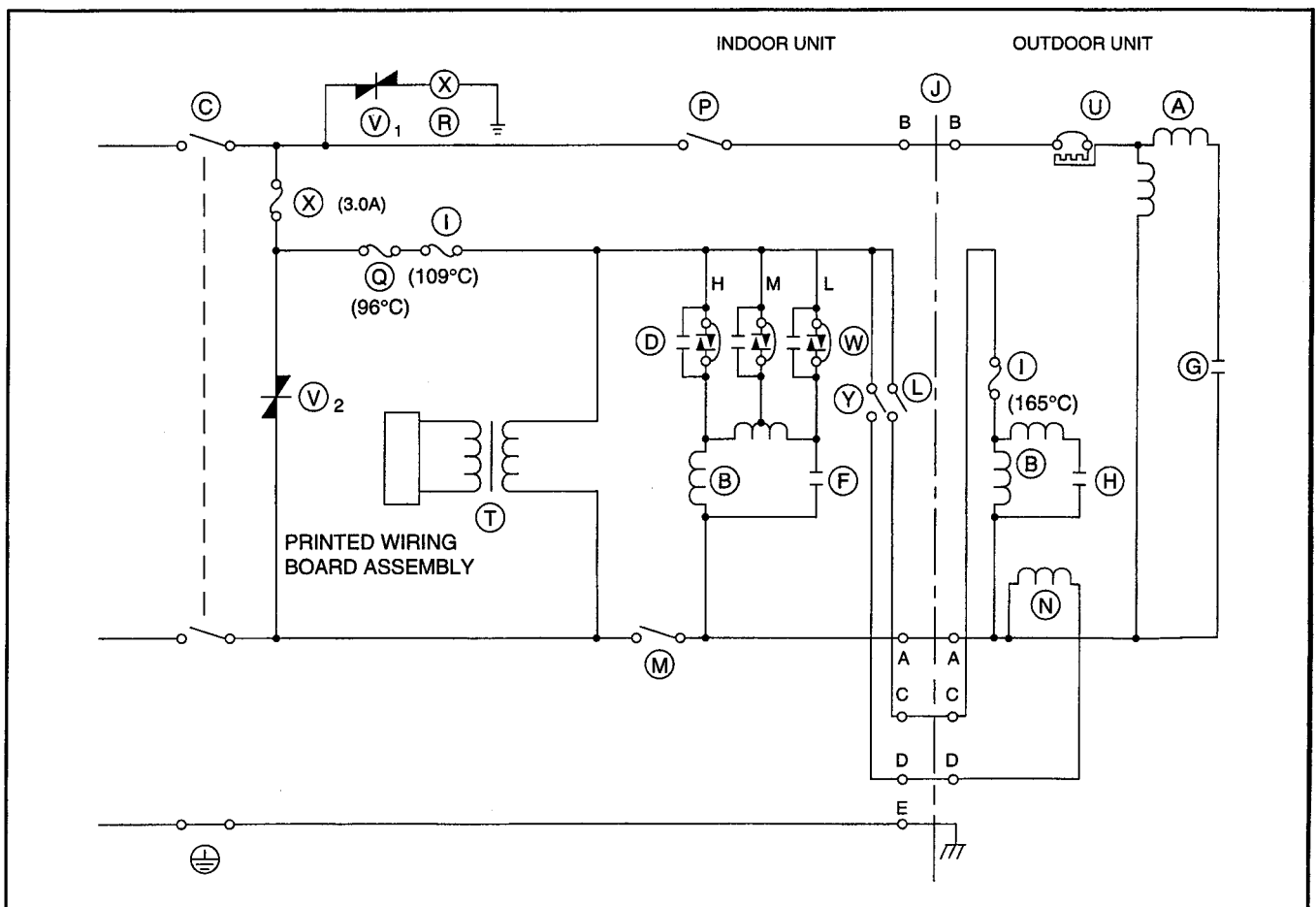


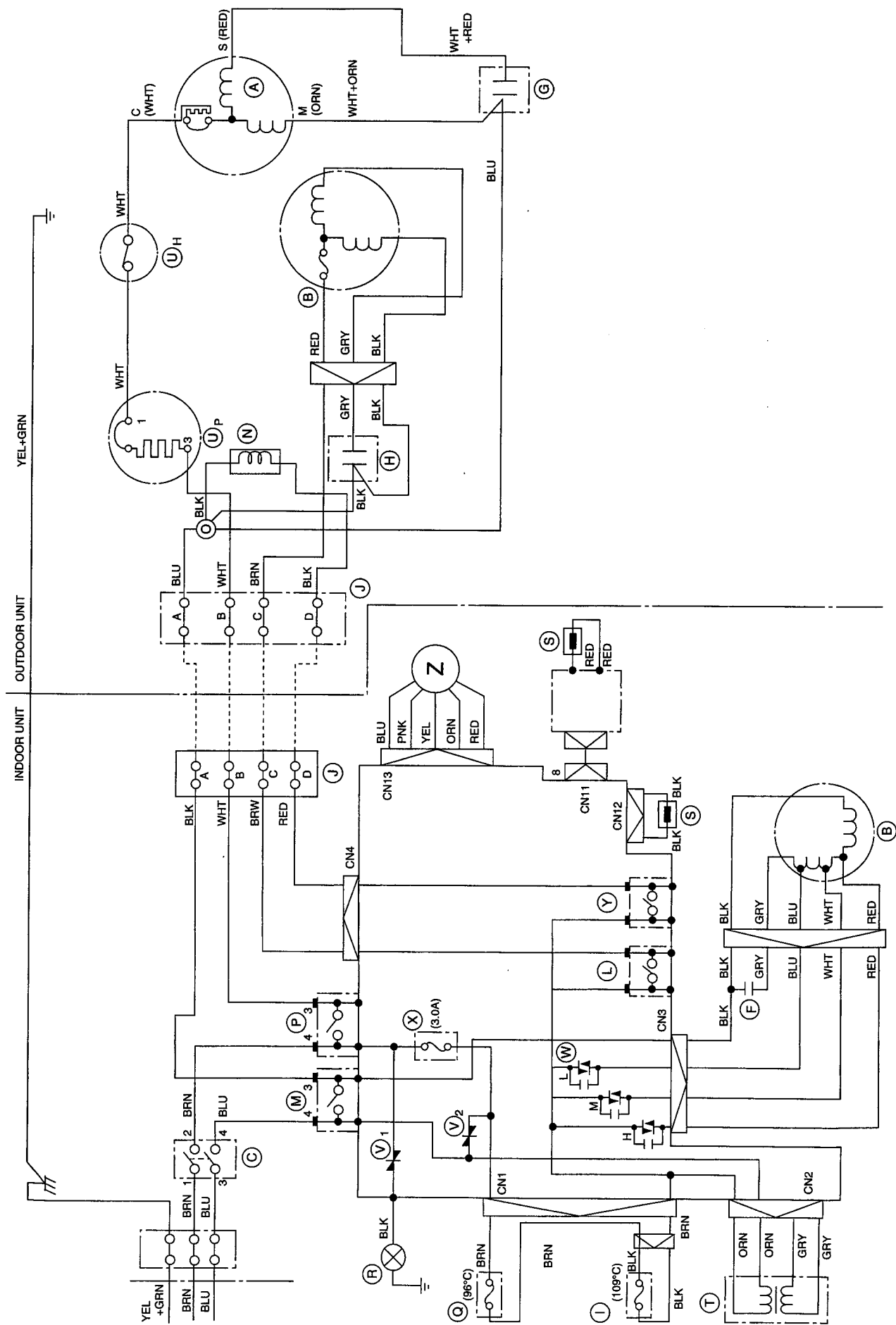
WIRING DIAGRAM

MODEL RAS-5142CH / RAC-5142CHV1

- | | |
|-----------------------------|---|
| (A) : COMPRESSOR | (N) : REVERSING VALVE |
| (B) : FAN MOTOR | (P) : POWER RELAY |
| (C) : POWER SWITCH | (Q) : THERMAL FUSE |
| (D) : 1,000 PF CAPACITOR | (R) : SURGE ABSORBER |
| (F) : 1 μ F CAPACITOR | (S) : THERMISTOR |
| (G) : 35 μ F CAPACITOR | (T) : TRANSFORMER |
| (H) : 2.5 μ F CAPACITOR | (U) : INTERNAL PROTECTOR |
| (I) : FAN MOTOR PROTECTOR | (V) : VARISTOR |
| (J) : TERMINAL BOARD | (W) : SOLID STATE RELAY FOR FAN (FAN SSR) |
| (K) : LINE CORD | (X) : FUSE |
| (L) : EXTERNAL FAN RELAY | (Y) : REVERSING VALVE RELAY |
| (M) : STICK RELAY | (Z) : AUTO SWEEP MOTOR |

BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	



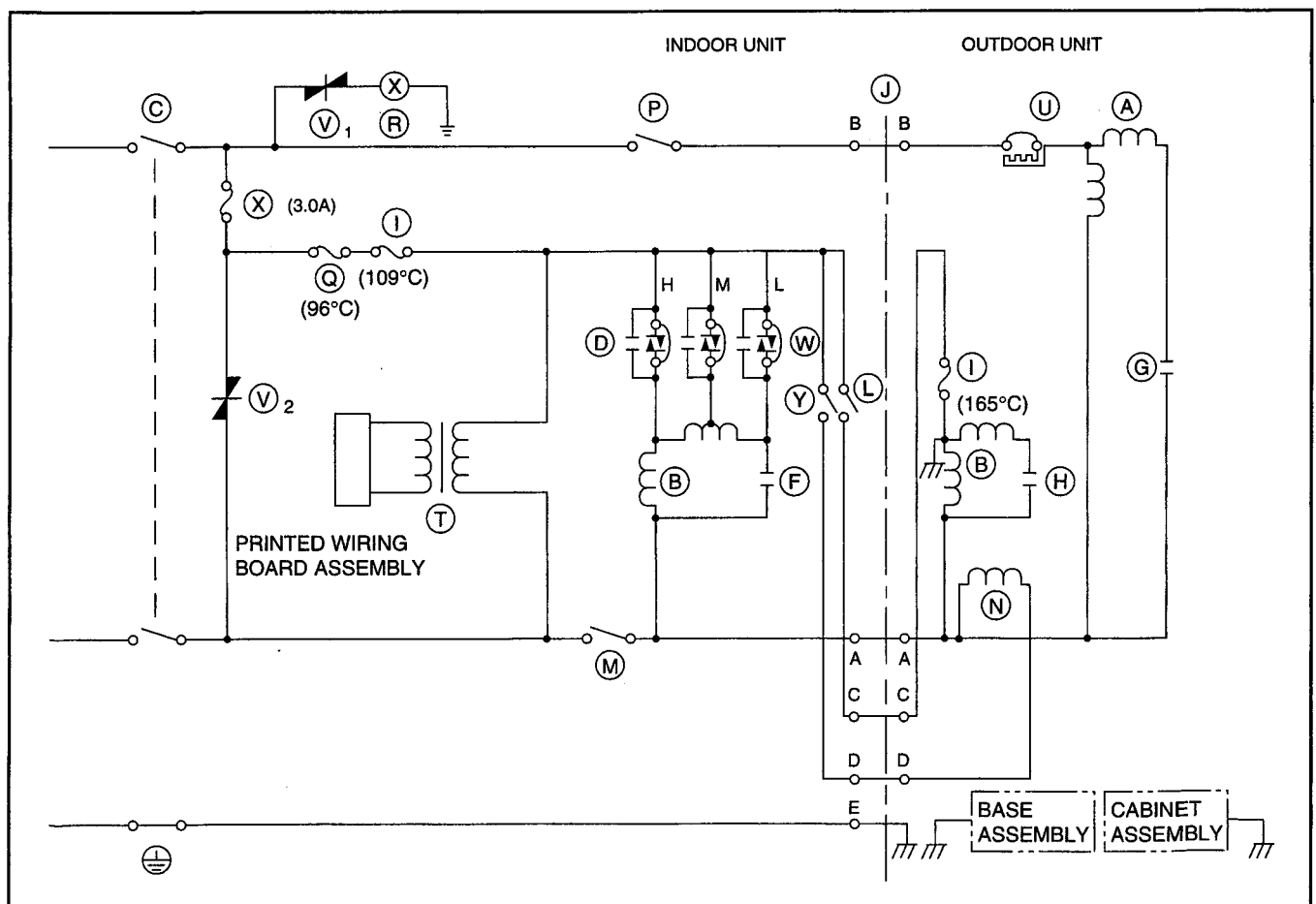


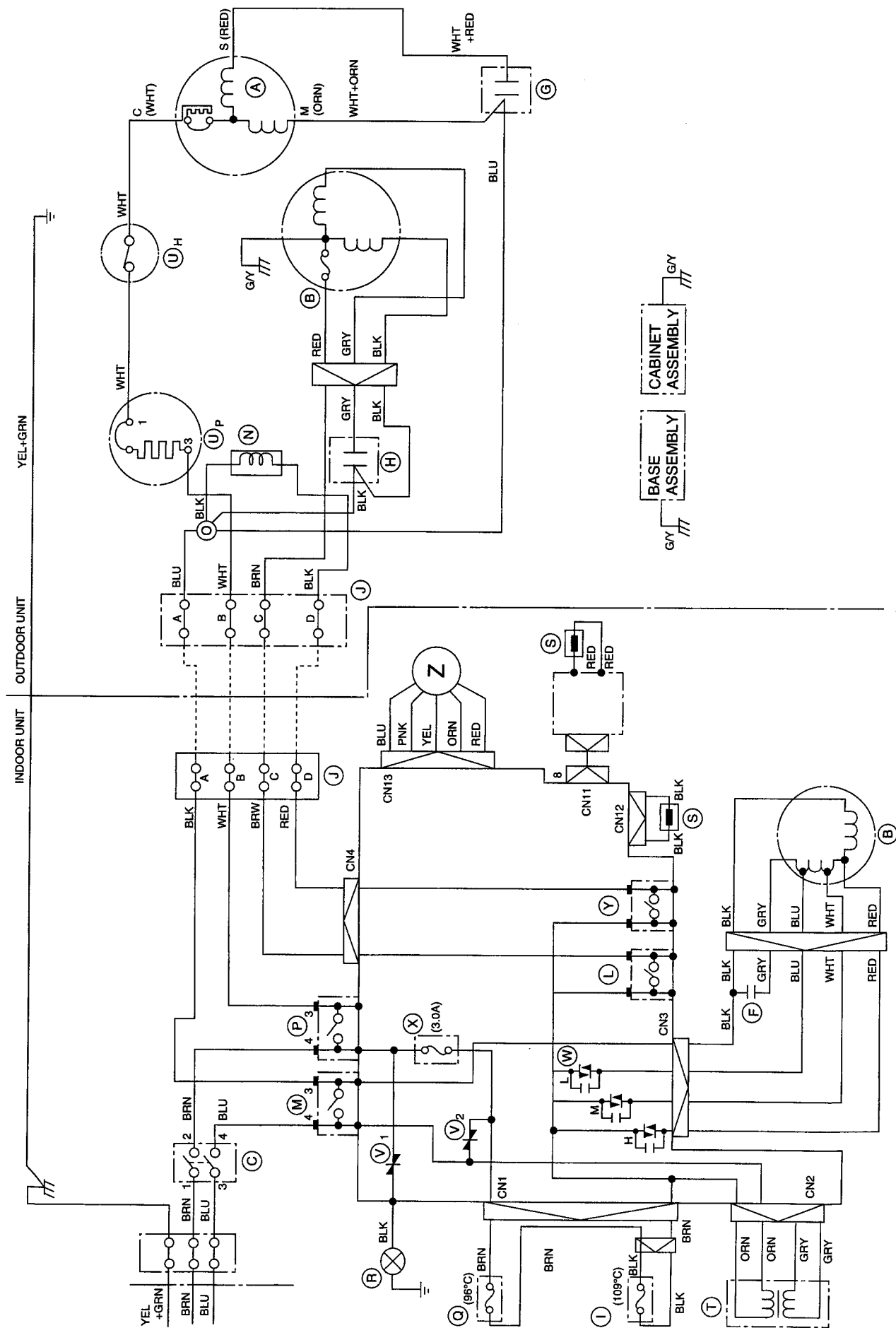
WIRING DIAGRAM

MODEL RAS-5142CH / RAC-5142CHA1

- | | |
|-----------------------------|---|
| (A) : COMPRESSOR | (N) : REVERSING VALVE |
| (B) : FAN MOTOR | (P) : POWER RELAY |
| (C) : POWER SWITCH | (Q) : THERMAL FUSE |
| (D) : 1,000 PF CAPACITOR | (R) : SURGE ABSORBER |
| (F) : 1 μ F CAPACITOR | (S) : THERMISTOR |
| (G) : 35 μ F CAPACITOR | (T) : TRANSFORMER |
| (H) : 2.5 μ F CAPACITOR | (U) : INTERNAL PROTECTOR |
| (I) : FAN MOTOR PROTECTOR | (V) : VARISTOR |
| (J) : TERMINAL BOARD | (W) : SOLID STATE RELAY FOR FAN (FAN SSR) |
| (K) : LINE CORD | (X) : FUSE |
| (L) : EXTERNAL FAN RELAY | (Y) : REVERSING VALVE RELAY |
| (M) : STICK RELAY | (Z) : AUTO SWEEP MOTOR |

BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	G/Y : GREEN & YELLOW

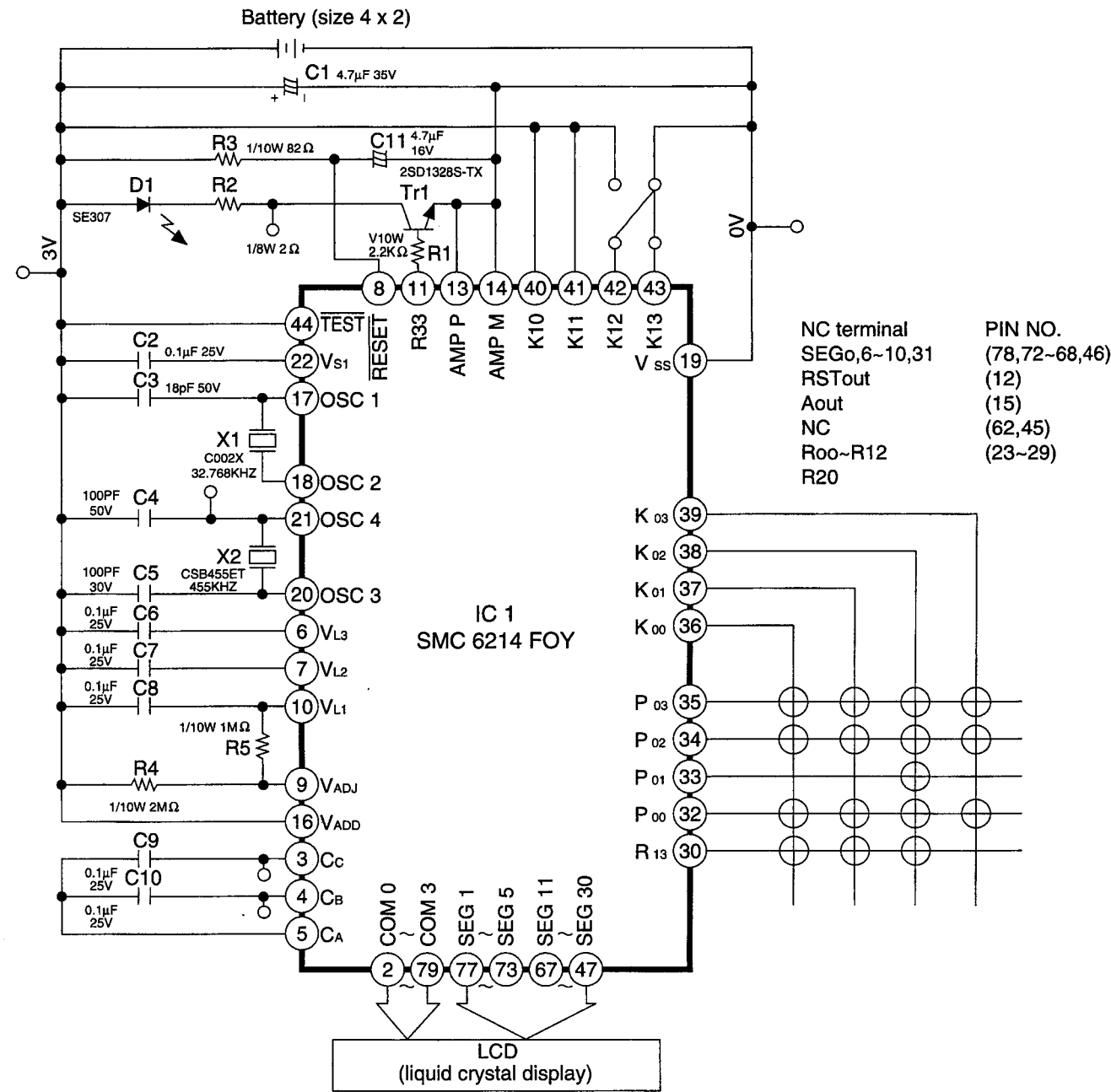




WIRING DIAGRAM OF PRINTED WIRING BOARD

Remote control

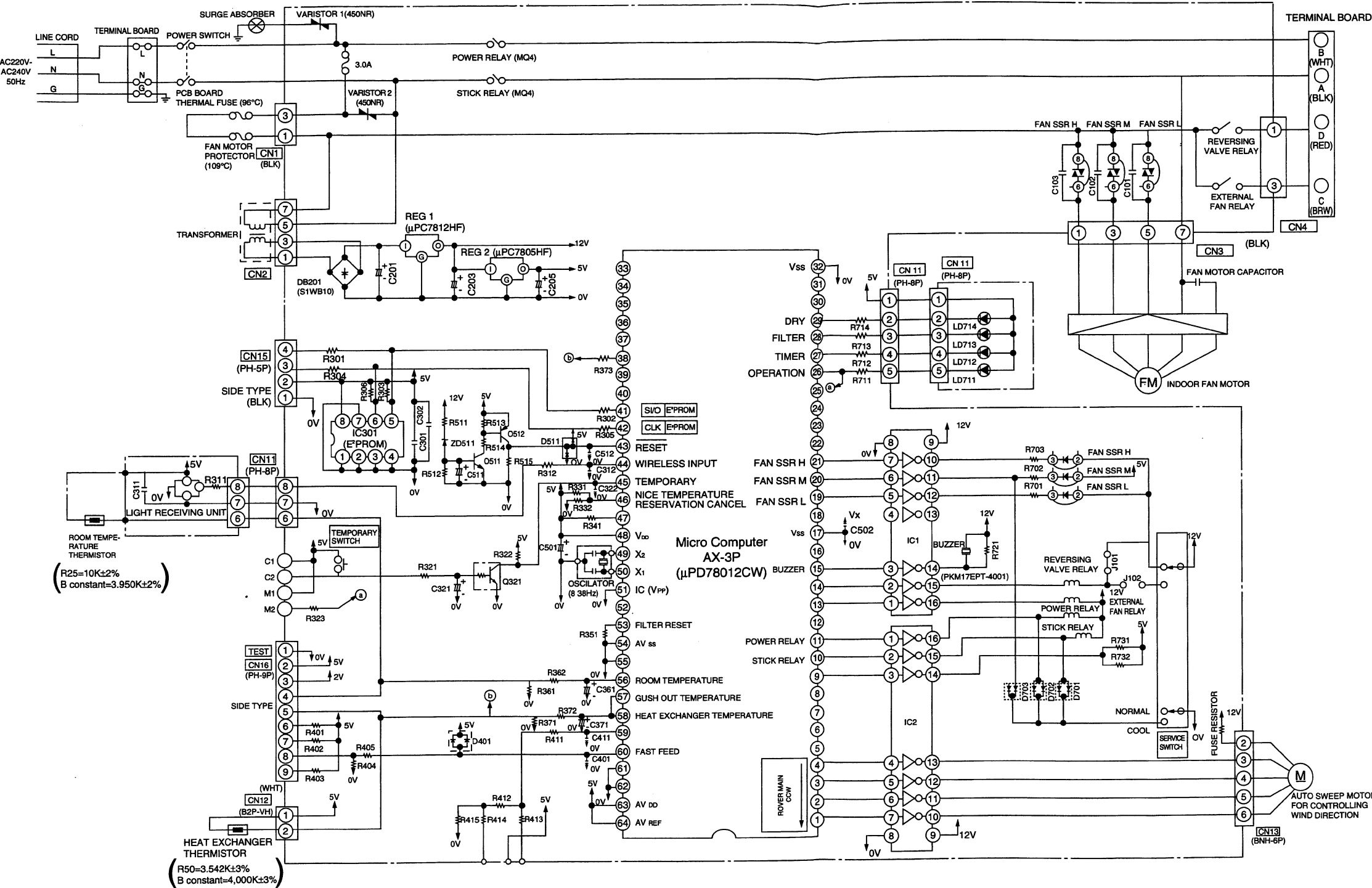
(RAR-24Z)



Keymatrixtable

	R13	P00	P01	P02	P03
K00	Room temperature down	_____	OFF Timer	Hour up	_____
K01	Good night	_____	ON Timer	Hour down	Present time
K02	Run/Stop	⌚ Reserved	Filter	_____	Cancel
K03	_____	Wind velocity changeover	Automatic air direction changeover	Running changeover	Room tempera- ture up

MODEL RAS-5142CH



Resistance (Ω)
J ... ±5%, G ... ±2%
F ... ±1%,
NO MARK ... 1/8W

SYMBOL	RATING
R301	390, J
R302	390, J
R303	5.1, J
R304	390, J
R305	390, J
R306	5.1K, J
R311	1K, J, 1/6W
R312	1K, J
R321	1K, J
R322	10K, J
R323	1K, J
R331	1K, J, 1/6W
R332	10K, J, 1/6W
R341	10K, J
R351	10K, J
R361	12.7K, F, 1/6W
R362	1K, J
R371	18K, F, 1/6W
R372	1K, J
R373	2.4K, G
R401	15K, J
R402	27K, J
R403	62K, J
R404	10K, J
R405	1K, J
R411	10K, G
R412	15K, G
R413	2K, G
R414	2K, G
R415	62K, G
R511	3K, J
R512	27K, J
R513	2.7K, J
R514	5.1K, J
R515	10K, J
R701	750, J, 1/2W
R702	330, J, 1/6W
R703	750, J, 1/2W
R711	510, J
R712	510, J
R713	510, J
R714	510, J
R721	5.1K, J
R731	110, J, 1/2W
R732	110, J, 1/2W

C ... CERA
D ... ELEC

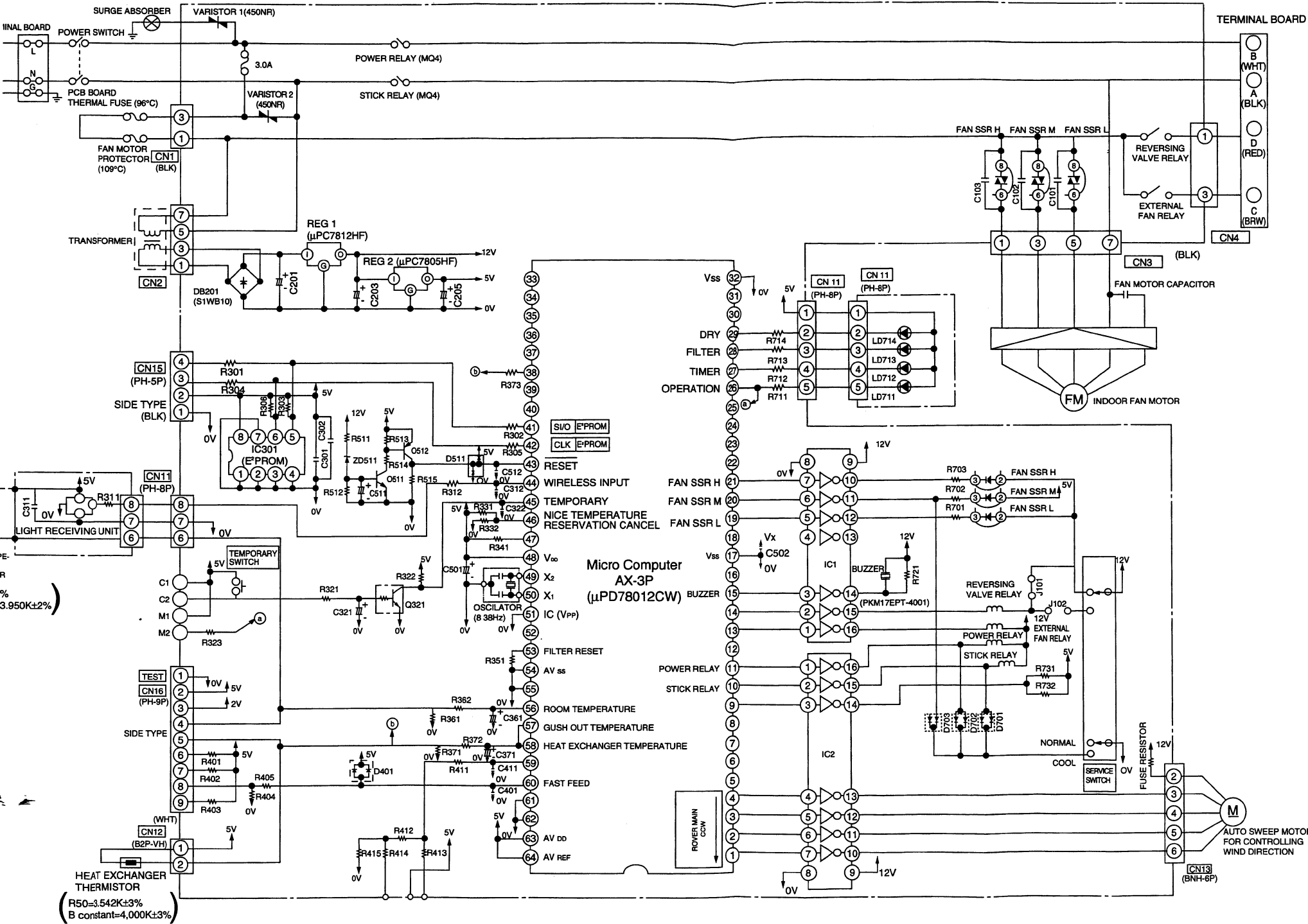
SYMBOL	1
C101	1
C102	1
C103	1
C201	
C203	
C205	
C301	
C302	
C311	
C312	
C321	
C322	
C361	
C371	
C401	
C501	
C502	
C511	
C512	

SYMBOL	Q321
Q321	
Q511	
Q512	

SYMBOL	D401
D401	
D511	
D701	
D702	
D703	

SYMBOL	ZD511
ZD511	

SYMBOL	LD711
LD711	
LD712	
LD713	
LD714	



Resistance (Ω)

J ±5%, G ±2%
F ±1%,
NO MARK ±1/8W

Capacitor (F)

C CERAMIC CAPACITOR
D ELECTROLYTIC CAPACITOR

SYMBOL	RATING
R301	390, J
R302	390, J
R303	5.1, J
R304	390, J
R305	390, J
R306	5.1K, J
R311	1K, J, 1/6W
R312	1K, J
R321	1K, J
R322	10K, J
R323	1K, J
R331	1K, J, 1/6W
R332	10K, J, 1/6W
R341	10K, J
R351	10K, J
R361	12.7K, F, 1/6W
R362	1K, J
R371	18K, F, 1/6W
R372	1K, J
R373	2.4K, G
R401	15K, J
R402	27K, J
R403	62K, J
R404	10K, J
R405	1K, J
R411	10K, G
R412	15K, G
R413	2K, G
R414	2K, G
R415	62K, G
R511	3K, J
R512	27K, J
R513	2.7K, J
R514	5.1K, J
R515	10K, J
R701	750, J, 1/2W
R702	330, J, 1/6W
R703	750, J, 1/2W
R711	510, J
R712	510, J
R713	510, J
R714	510, J
R721	5.1K, J
R731	110, J, 1/2W
R732	110, J, 1/2W

SYMBOL	RATING	TYPE
C101	1,000P, 1,000V	C
C102	1,000P, 1,000V	C
C103	1,000P, 1,000V	C
C201	1,000μ, 35V	D
C203	100μ, 16V	D
C205	100μ, 16V	D
C301	0.1μ, 50V	C
C302	0.1μ, 50V	C
C311	0.047μ, 25V	C
C312	1,000P, 50V	C
C321	0.1μ, 50V	D
C322	0.047μ, 25V	C
C361	10μ, 16V	D
C371	10μ, 16V	D
C401	0.1μ, 50V	C
C501	100μ, 16V	D
C502	0.1μ, 50V	C
C511	2.2μ, 50V	D
C512	0.047μ, 25V	C

Transistor

SYMBOL	MODEL
Q321	UN2216
Q511	2SC2462LC
Q512	2SA1052MC

Diode

SYMBOL	MODEL
D401	MA151WKTW
D511	MA153ATX
D701	MA151WKTW
D702	MA151WKTW
D703	MA151WKTW

Zener diode

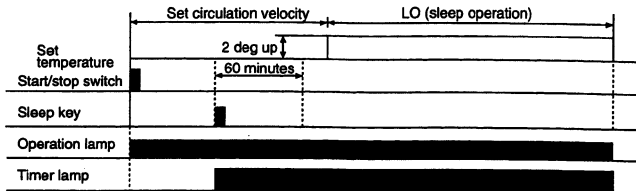
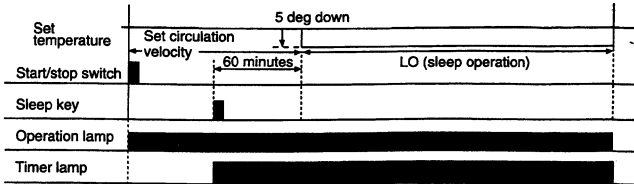
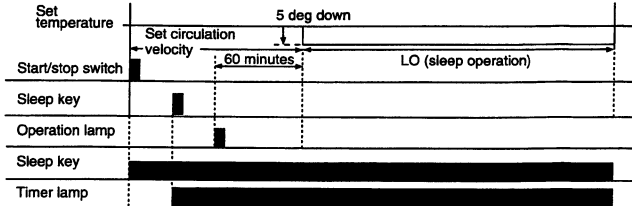
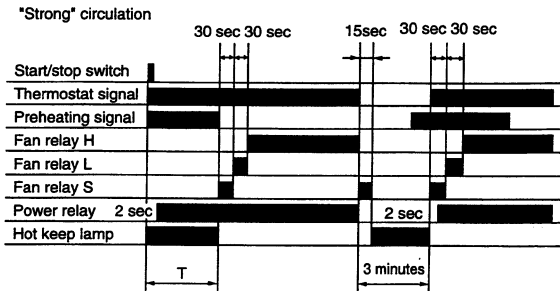
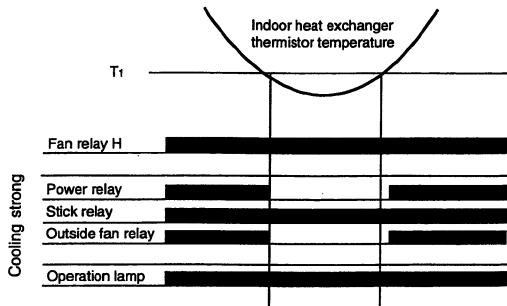
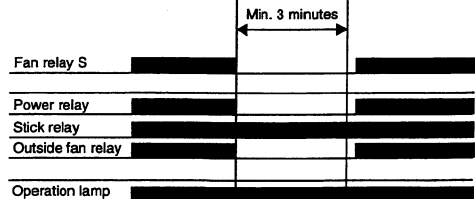
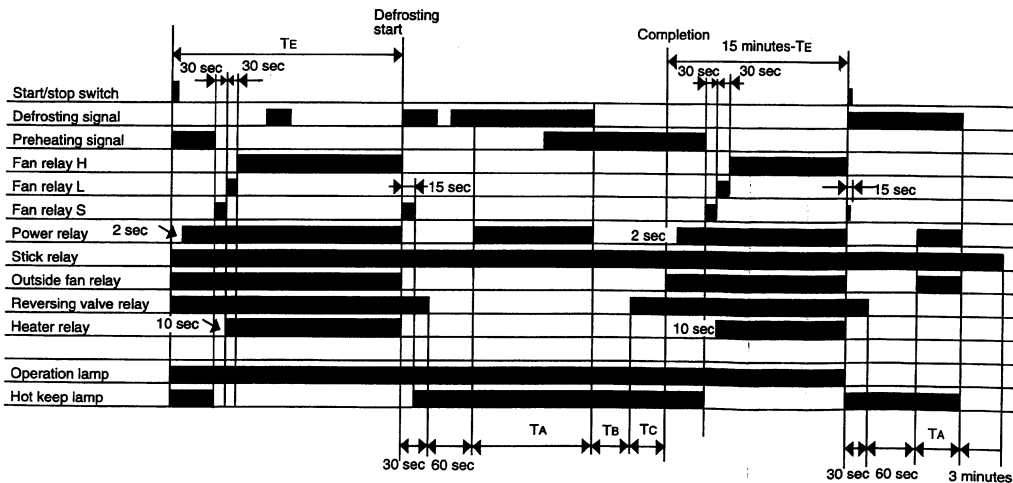
SYMBOL	MODEL
ZD511	HZ7B2

LED

SYMBOL	MODEL	COLOR
LD711	SEL2713K	YELLOW
LD712	SEL2413E	GREEN
LD713	SEL2213C	RED
LD714	SEL2213C	RED

BASIC MODE

Operation mode		Fan	Cooling	Sensor dehumidification	Heating	Automatic
Control function						
1	Start/stop button, basic mode	<div>Start/stop button</div> <div>operation lamp</div> <div>Operation and stop are repeated independent of timer reservations</div>				
2	Timer operation	OFF timer	<div>Start/stop button</div> <div>Reservation</div> <div>Cancel</div> <div>Operation lamp</div> <div>Timer lamp</div> <div>Timer memory</div> <div>(OFF timer during stop)</div> <div>(Cancel)</div> <div>(Change of the reservation time)</div>			
		ON timer	<div>Start/stop button</div> <div>Reservation</div> <div>Cancel</div> <div>Operation lamp</div> <div>Timer lamp</div> <div>Timer memory</div> <div>(ON timer during operation)</div> <div>(Cancel)</div> <div>(Change of the reservation time)</div>			
		OFF ⇄ ON timer	<div>(OFF → ON timer)</div> <div>(ON → OFF timer)</div> <div>(ON → OFF timer during operation)</div> <div>(OFF → ON timer during stop)</div> <div>Start/stop button</div> <div>Reservation</div> <div>Cancel</div> <div>Operation lamp</div> <div>Timer lamp</div> <div>Timer memory</div> <div>PM1:00 PM3:00 PM5:00 PM1:00 PM3:00 PM5:00 PM1:00 PM3:00 PM5:00 PM1:00 PM3:00 PM5:00</div>			
3	Circulation mode	Automatic	• Operation in the previous circulation mode	• "HI", "MED", or "LO" operation is executed according to the thermostat signal. (Refer to "Thermostat operation".)	• "HI", "MED", "LO", and "Stop" are repeated according to the thermostat signal and time.	
		HI	• Operation in "HI" mode	• Same as on the left.	• "HI", "MED", "LO", and "Stop" are repeated according to the thermostat signal and time.	
		MED	• Operation in "MED" mode	• Same as on the left.	• "MED", "LO", and "Stop" are repeated according to the thermostat signal and time.	
		LO	• Operation in "LO" mode	• Same as on the left.	• "LO" and "Stop" are repeated according to the thermostat signal and time.	
4	Thermostat operation H → HI L → MED S → LO	• Only circulation with cut velocity is executed, independent of the thermostat signal.		Example for "HI" circulation mode		
		<div>(1) Strong</div> <div>Start/stop button</div> <div>Fan relay H</div> <div>Stick relay</div> <div>(1) In case of "Automatic" mode</div> <div>Set temperature</div> <div>Start/stop button</div> <div>Fan relay H</div> <div>Fan relay L</div> <div>Fan relay S</div> <div>Power relay 2 sec</div> <div>Stick relay</div> <div>External fan relay</div> <div>Operation lamp</div> <div>H S L S L H S</div> <div>Note:</div> <div>• The min. ON time of the power relay is 3 minutes, and the min. OFF time also is 3 minutes.</div> <div>(2) In other modes than "Automatic"</div> <div>Same as above (but operation is made with the velocity set at the time of operation start).</div>		<div>(1) When the set temperature is lower than the room temperature</div> <div>Set temperature</div> <div>Start/stop button</div> <div>Fan relay S</div> <div>Power relay 2 sec</div> <div>Stick relay</div> <div>External fan relay</div> <div>Operation lamp</div> <div>S S S</div> <div>• The min. ON time of the power relay is 3 minutes, and the min. OFF time also is 3 minutes.</div> <div>• The indoor fan is not delayed with operation start by start/stop button ON.</div> <div>• The indoor fan is delayed by 5 sec with operation start by thermostat operation.</div> <div>(2) Set temperature higher than room temperature</div> <div>Set temperature</div> <div>Start/stop button</div> <div>Fan relay S</div> <div>Power relay 2 sec</div> <div>Stick relay</div> <div>External fan relay</div> <div>Operation lamp</div> <div>30 sec 5 sec 2 sec</div> <div>Notes:</div> <div>• Forced operation by start/stop button ON is executed even with thermostat OFF.</div> <div>• The room temperature 30 sec after operation start, minus 0.66 deg, becomes the set temperature.</div> <div>• When the room temperature is 16°C or lower, 16°C becomes the set temperature.</div> <div>• The other operations are the same as for (1).</div>		
				<div>Room temperature ↑ at the start of operation ↓</div> <div>27°C</div> <div>23°C</div> <div>Cooling</div> <div>Sensor dehumidification</div> <div>Heating</div> <div>The set temperature shall be 27°C.</div> <div>The set temperature shall be 2 degrees below the room temperature at the start of operation.</div> <div>The temperature shall be 23°C + temperature shift amount.</div> <div>• A shift is not accepted at the time of operation start.</div> <div>• There is no switching between modes after start of operation.</div> <div>• When the operation is started again within 20 min. after stop with the start/stop button, operation will be executed in the previous mode.</div> <div>• The operation details are the same as for each operation mode.</div> <div>• The set temperature is set with the room temperature adjustment button. Correction by V, ±3°C is possible with. At this time, the operation mode judgement temperature also is shifted at the same time. However, correction is possible only in cooling operation mode, but not in "Sensor dehumidification" mode.</div>		

	Operation mode	Fan	Cooling	Sensor dehumidification	Heating	Automatic																
	Control function																					
7	Sleep key <ul style="list-style-type: none">The set temperature after sleep shift in sensor dehumidification operation is limited by 16°C.	<ul style="list-style-type: none">The operation is switched OFF at the set time.			 <ul style="list-style-type: none">When the sleep key is switched on during OFF timer operation, the OFF timer will be canceled.	<ul style="list-style-type: none">Sleep operation is executed for each operation mode.																
			<p>Notes:</p> <ul style="list-style-type: none">60 minutes after the sleep key is switched on, sleep operation is started.When the sleep key is switched on during OFF timer operation, the OFF timer will be canceled.	 <ul style="list-style-type: none">When the sleep key is switched on during ON after a timer reservation, sleep operation will be started.	<ul style="list-style-type: none">Sleep operation is executed for each operation mode.																	
8	Preheating operation				 <p>Notes:</p> <ul style="list-style-type: none">Even when the preheating signal is not given as input, heating operation is started when 3 minutes have passed for T.Preheating operation is executed at the time of operation start and after completion of defrosting, and at all other times, there is no operation, independent of the preheating signal.	<ul style="list-style-type: none">At the time of heating operation mode, the same operation as for heating is executed.																
9	Defrosting (including automatic fresh defrosting).		 <p>Cooling strong</p>	 <p>Sensor dehumidification</p>	 <table><tr><td>TA</td><td>10 min.</td></tr><tr><td>(Reverse cycle defrosting)</td><td>3 min.</td></tr><tr><td>TB</td><td>30 sec</td></tr><tr><td>(Silencing period)</td><td></td></tr><tr><td>TC</td><td>30 sec</td></tr><tr><td>(Cycle balancing time)</td><td></td></tr><tr><td>TE</td><td>60 min.</td></tr><tr><td>(Defrosting prohibition time)</td><td>3 min.</td></tr></table> <ul style="list-style-type: none">For the time TE after start of heating operation, defrosting will not be executed even when the defrosting signal is given as input.When the reserve cycle defrosting TA has continued for the time shown in the table on the left, the operation advances to TB and TC independent of the defrosting signal.When the power relay becomes ON after expiration of the time TE, defrosting will be started immediately with input of the defrosting signal.Once defrosting has been completed, the defrosting signal is not accepted for the time TE.When a defrosting signal has been given as input at the time of stop by means of the start/stop switch or at the time of OFF timer count-up, defrosting is executed before operation stop.The defrosting signal is not accepted at the time of overload input.	TA	10 min.	(Reverse cycle defrosting)	3 min.	TB	30 sec	(Silencing period)		TC	30 sec	(Cycle balancing time)		TE	60 min.	(Defrosting prohibition time)	3 min.	<ul style="list-style-type: none">Defrosting of each operation mode is executed.
TA	10 min.																					
(Reverse cycle defrosting)	3 min.																					
TB	30 sec																					
(Silencing period)																						
TC	30 sec																					
(Cycle balancing time)																						
TE	60 min.																					
(Defrosting prohibition time)	3 min.																					

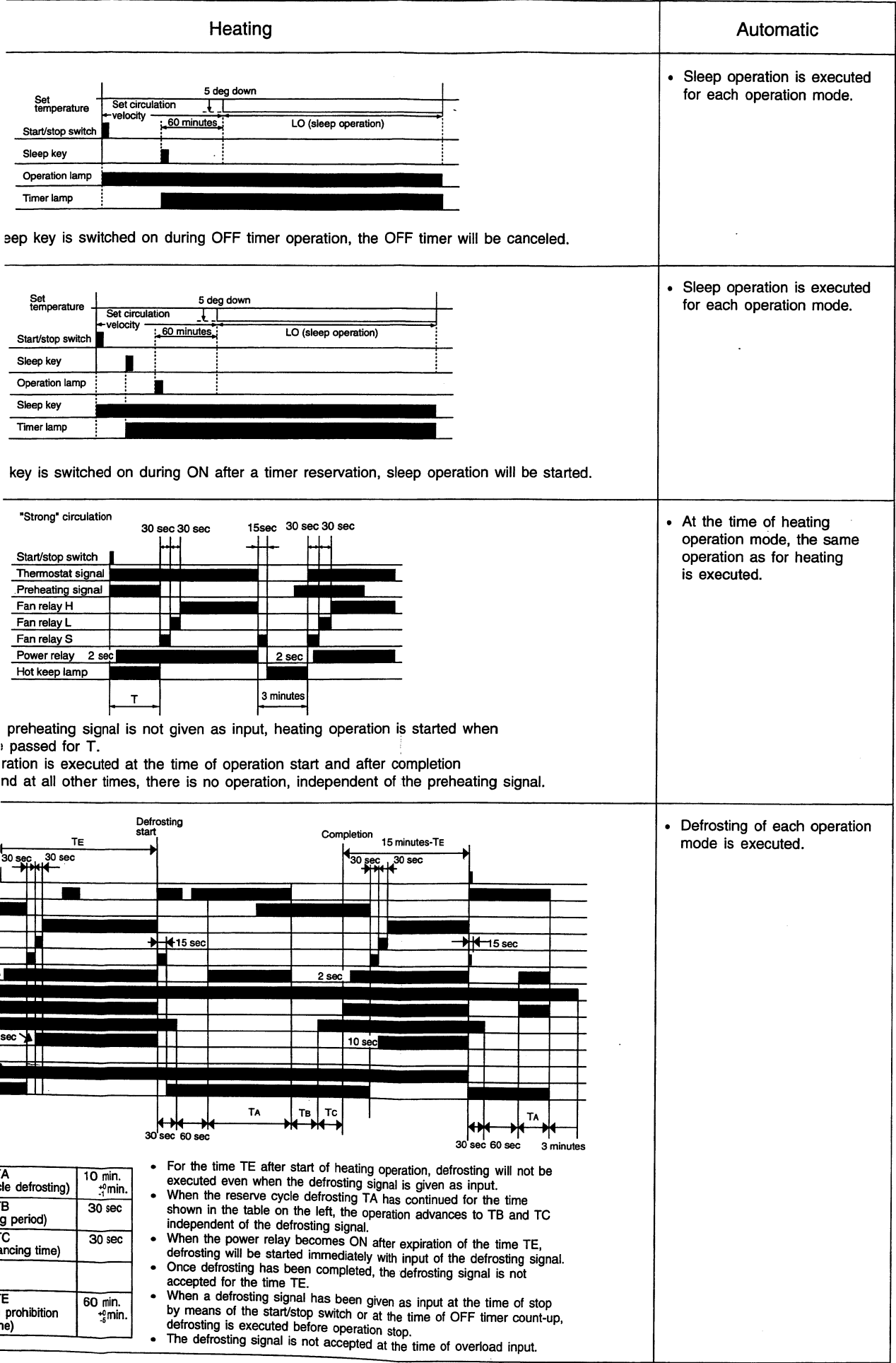


Table 1 Specifications

Item		
Operation switching	Automatic	Yes
	Heating	Yes
	Fan	Yes
	Sensor dehumidification	Yes
	Cooling	Yes
Temporary switch		Yes (automatic)
Service switch	Heating	Yes
	Cooling	Yes
Nice temperature reservation		Yes
Automatic fresh defrosting		Yes
Defrosting		Yes
Pd cut 1		Yes
Pd cut 2		Yes
Pd cut 3		Yes
Heating load reduction		Yes
External fan relay		Yes
Reversing valve relay		Yes
Reversing valve lock protection		Yes
Sleep circuit		Yes
Heater operation at the time of sensor dehumidification		No
Automatic blowing direction		Yes
Filter sign		Yes
Wireless mode		Cooling wireless

Table 2 Sensor operation values

Item				
Thermostat operation	ON temperature (Thermostat relay) power relay (°C)	Cooling, Sensor dehumidification	16	17.6
			24	25.6
			32	33.6
		Heating	16	19.6
			24	27.6
			32	35.6
Differential (°C)			0.33	
			—	
			—	
Low-temperature defrosting	(T1)	ON (°C)	5.0	
		Reset (°C)	12.0	
Preheating	(T2)	Reset (°C)	15.0	
		ON (°C)	14.0	
			—	
			—	
Pd cut 1	(T3)	ON (°C)	53.0	
	(T4)	Reset (°C)	45.0	
Pd cut 2	(T6)	ON (°C)	65.0	
	(T7)	Reset (°C)	49.0	
	(T5) Fan Relay H →	Original (°C)	35.0	
Pd cut 3	(T8)	ON (°C)	69.0	
	(T9)	Reset (°C)	55.0	

Other detailed specifications

1.

When the room temperature rises within 3 minutes after thermostat OFF during cooling operation with automatic velocity, the blowing velocity changes in the order of S → L → H in the same way as at the time of thermostat ON.
2.

In case of Tele. control input during stopped ON timer, operation will be started at that time and the timer will be cleared.
3.

In case of Tele. control input during operation of the OFF timer, the operation will be stopped at that time and the timer will be cleared.
4.

Even when operation stop is executed at the time of outside fan OFF by overload, automatic fresh defrosting will not be executed.
5.

In case of switching to "Heating" during "Automatic" heating operation, the operation will be continued as it is when the thermostat is ON. 3 min delay will not be entered. However, the set room temperature and the blowing velocity will be according to the remote control signal. The same applies for switching from "Heating" to "Automatic" heating.
6.

In case of switching from "Sensor dehumidification" operation to "Cooling", as it is when the thermostat is ON. 3 min delay will not be entered. However, the set room temperature and the blowing velocity will be according to the remote control signal. The same applies for switching from "Cooling" to "Sensor dehumidification". The same also applies for "Automatic" sensor dehumidification, cooling "Sensor dehumidification", "Cooling".
7.

The filter sign lights after operation of the indoor fan for 100 hours. The time is cleared by the filter switch.
8.

After entry into trouble mode (when the indication lamp is flashing), the rapid feed mode can not be changed.
9.

When operation by nice temperature reservation is executed during sleep operation, normal operation will be continued, and the advance time becomes the temperature difference between the set temperature without sleep shift and the room temperature.
10.

The 60 minutes of defrosting prohibition are counted from Thermostat ON after start/stop switch ON. When the thermostat is OFF at the time of start/stop switch ON, the 60 minutes will be counted from the time of thermostat ON. The initial OFF time is not counted. Counting starts when the thermostat becomes ON, and the count then continues even if the thermostat becomes OFF.
11.

In case of switching from "Heating" the reversing valve is held for 3 minutes.
12.

The defrosting signal is not accepted with overload input, and the operation becomes as shown below when the overload input disappears.
- (1)

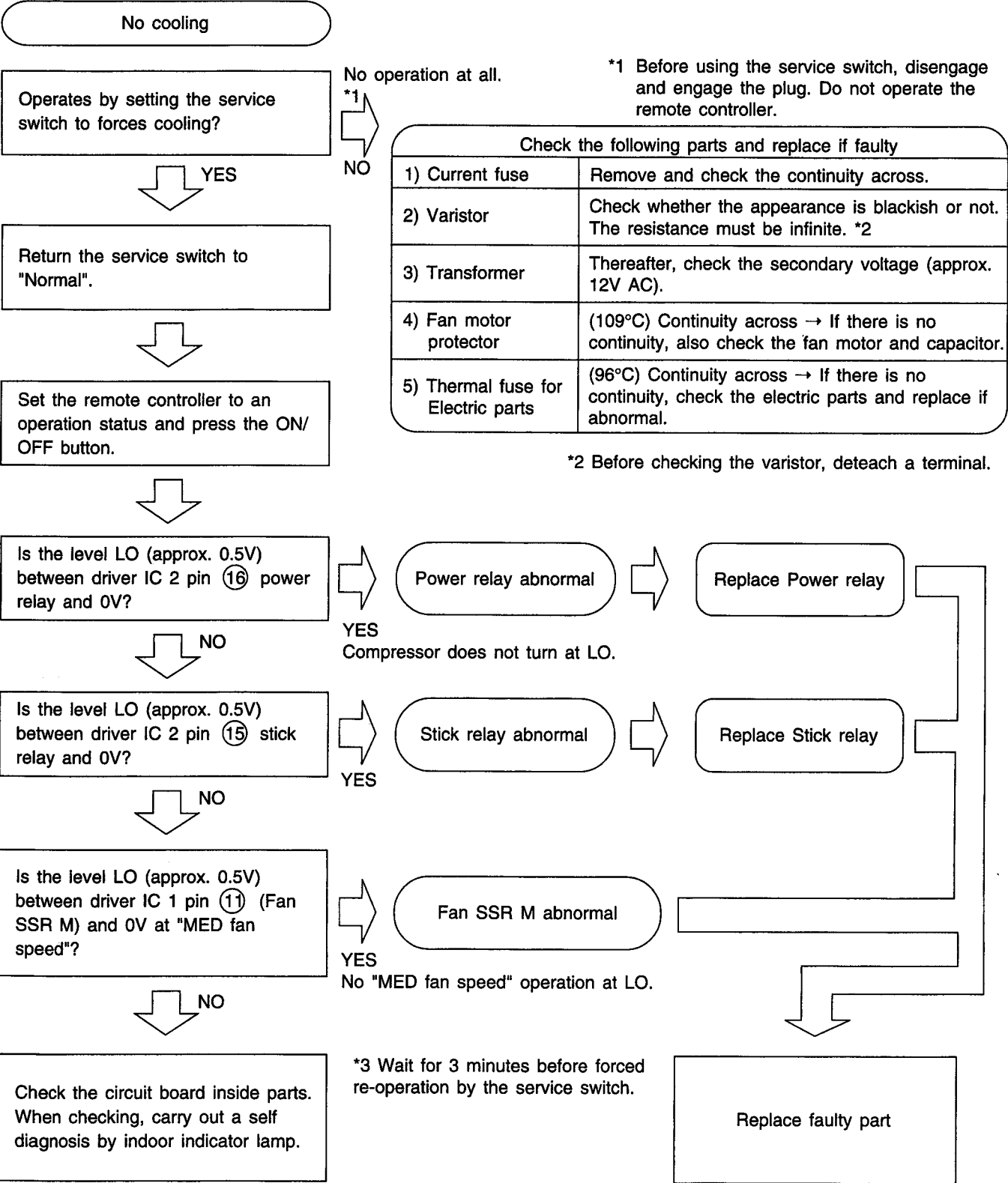
When previously the defrosting signal existed without overload input, defrosting will start immediately.
- (2)

In cases other than the above, defrosting will be executed with a defrosting signal in the condition without overload input.

AUTO SWING FUNCTION

INPUT SIGNAL	PRESENT CONDITION			OPERATING SPECIFICATION	REFERENCE
	OPERATION	OPERATION MODE	AIR DEFLECTOR		
KEY INPUT	STOP	EACH MODE	STOP	ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD	INITIALIZE AT NEXT OPERATION.
			DURING ONE SWING	STOP AT THE MOMENT.	
	DURING OPERATION	AUTO COOL COOL FAN AUTO DRY DRY	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
		AUTO HEAT HEAT CIRCULATOR	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
THERMO. ON (INTERNAL FAN ON)	DURING OPERATION	AUTO DRY DRY AUTO HEAT HEAT CIRCULATOR	TEMPORARY STOP	START SWING AGAIN.	
THERMO. OFF (INTERNAL FAN OFF)			DURING SWINGING	STOP SWINGING TEMPORARILY. (SWING MODE IS CLEARED IF SWING COMMAND IS TRANSMITTED DURING TEMPORARY STOP.)	
MAIN SWITCH ON	STOP	COOL FAN DRY	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD ② UPWARD	
		HEAT CIRCULATOR	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD	
MAIN SWITCH OFF	DURING OPERATION	EACH MODE	STOP DURING SWINGING	ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD	INITIALIZE AT NEXT OPERATION.
			DURING INITIALIZING		
CHANGE OF OPERATION	DURING OPERATION	EACH MODE	STOP	INITIALIZING CONDITION OF EACH MODE.	
			DURING SWINGING	STOP SWINGING AND MODE BECOMES INITIALIZING CONDITION.	

TROUBLE-SHOOTING

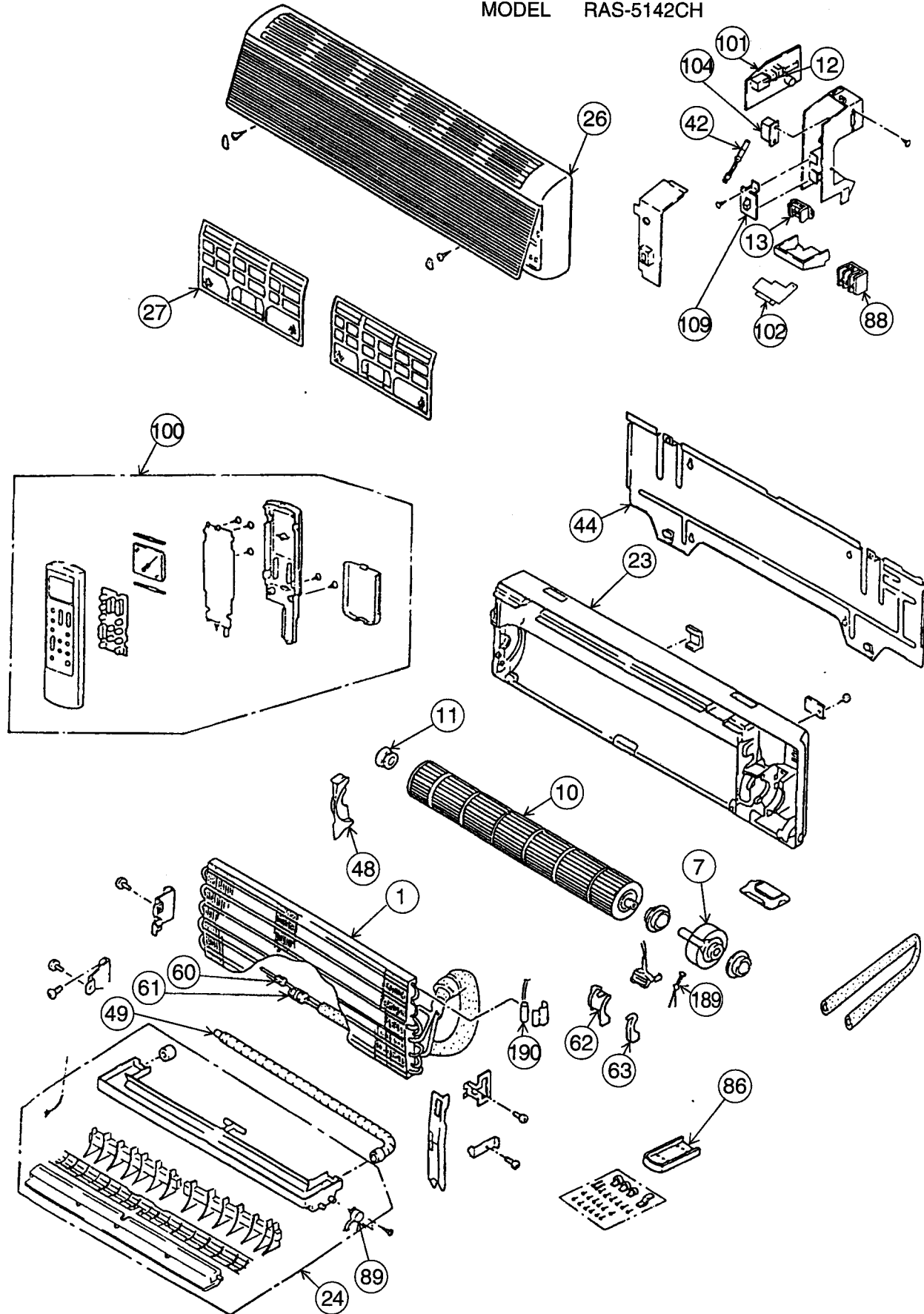


Self-diagnosis check method with the indoor indication lamp

Trouble mode	Indication lamp	Operation contents	Inspection parts
Defective operation of the room temperature thermistor	Timer lamp flashing	Full stop occurs with a short-circuit or a wire break of the room temperature thermistor (Reset for recovery)	Inspect the room temperature thermistor
Reversing valve lock protection operation	Timer lamp flashing	Full stop occurs when the temperature of the indoor heat exchanger drops to 7.1°C or less because of defective operation of the reversing valve for heating operation (Reset for recovery)	<ol style="list-style-type: none"> 1) Inspect the operation of the reversing valve (outdoor unit). 2) Inspect the reversing valve relay opening (indoor key panel). 3) Inspect the driver IC1 (Indoor key panel). 4) Inspect the opening of the heat exchanger thermistor (including the connector).

PARTS LIST AND DIAGRAM

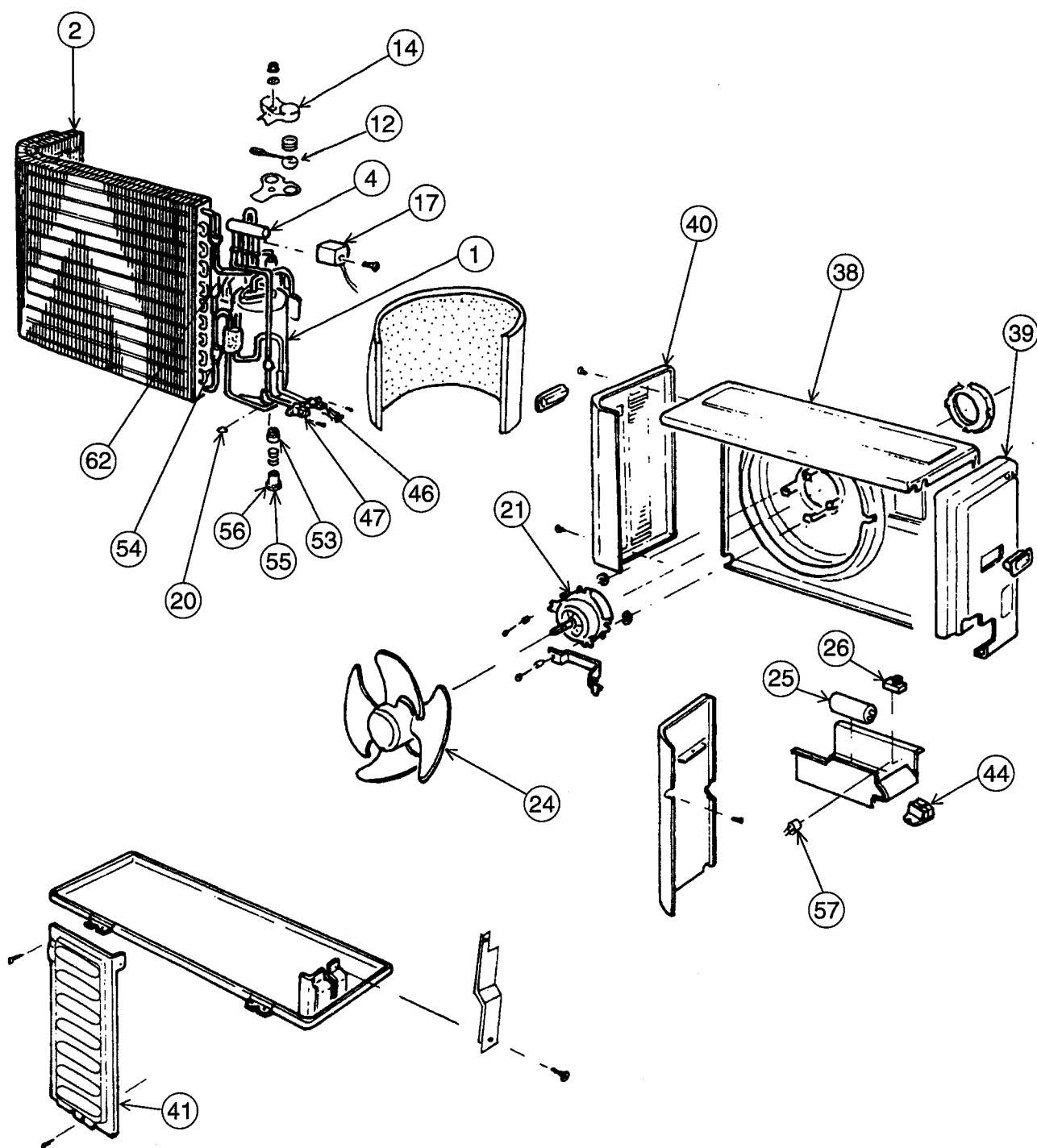
MODEL RAS-5142CH



MODEL RAS-5142CH

NO.	PART NO. RAS-5142CH	Q'TY/UNIT	PARTS NAME
1	PMRAS-5100C 001	1	EVAPORATOR
7	PMRAS-5142C 002	1	FAN MOTOR 14W, 1KG
10	RAS-226DW 005	1	TANGENTIAL FLOW FAN
11	RAS-1809V 006	1	FAN SUPPORT ASSEMBLY
12	RAS-106GFW 902	1	CAPACITOR 1 μ F, 450V
13	PMRAS-5101CH 003	1	TERMINAL BOARD (4P)
23	PMRAS-5142C 003	1	CABINET
24	PMRAS-5142CH 001	1	DRAIN PAN ASSEMBLY
26	PMRAS-5142CH 002	1	FRONT COVER ASSEMBLY
27	RAS-289DX 009	2	FILTER
42	PMRAS-5100C 005	1	THERMAL FUSE (96°C)
44	RAS-258CX 018	1	MONTING PLATE
48	RAS-288CX 004	1	FAN COVER
49	RAS-258CX 012	1	DRAIN HOSE
60	PMRAS-5100C 006	1	UNION (2)
61	PMRAS-5142C 006	1	UNION (4)
62	RAS-258CX 009	1	FAN MOTOR SUPPORT (L)
63	RAS-258CX 030	1	FAN MOTOR SUPPORT (R)
86	RAS-2552W 028	1	REMOTE CONTROL SUPPORT
88	RAS-3109C 907	1	TERMINAL BOARD (3P)
89	RAS-258CX 031	1	AUTO SWEEP MOTOR
100	PMRAS-5101CH 004	1	REMOTE CONTROL ASSEMBLY
101	PMRAS-5142CH 003	1	P.W.B. (MAIN)
102	PMRAS-5101CH 006	1	P.W.B. (LED)
104	PMRAS-5100C 012	1	TRANSFORMER
106	RAS-2555W 013	2	RELAY (MQ4)
109	RAS-288AX 011	1	SWITCH (POWER)
110	RAV-1645D 033	1	SERVICE SWITCH
112	RAS-2852W 009	1	THERMISTOR (ROOM TEMP.)
115	PMRAS-5100C 013	1	FUSE (3.0A)
117	RAS-2216W1 011	1	FUSE HOLDER
120	RAS-22DWC 008	1	OSCILLATOR
121	RA-108CHLXA 908	2	VARISTOR 450NR(15)
128	R-927CXV 034	1	TRANSISTOR (2SC2462LC)

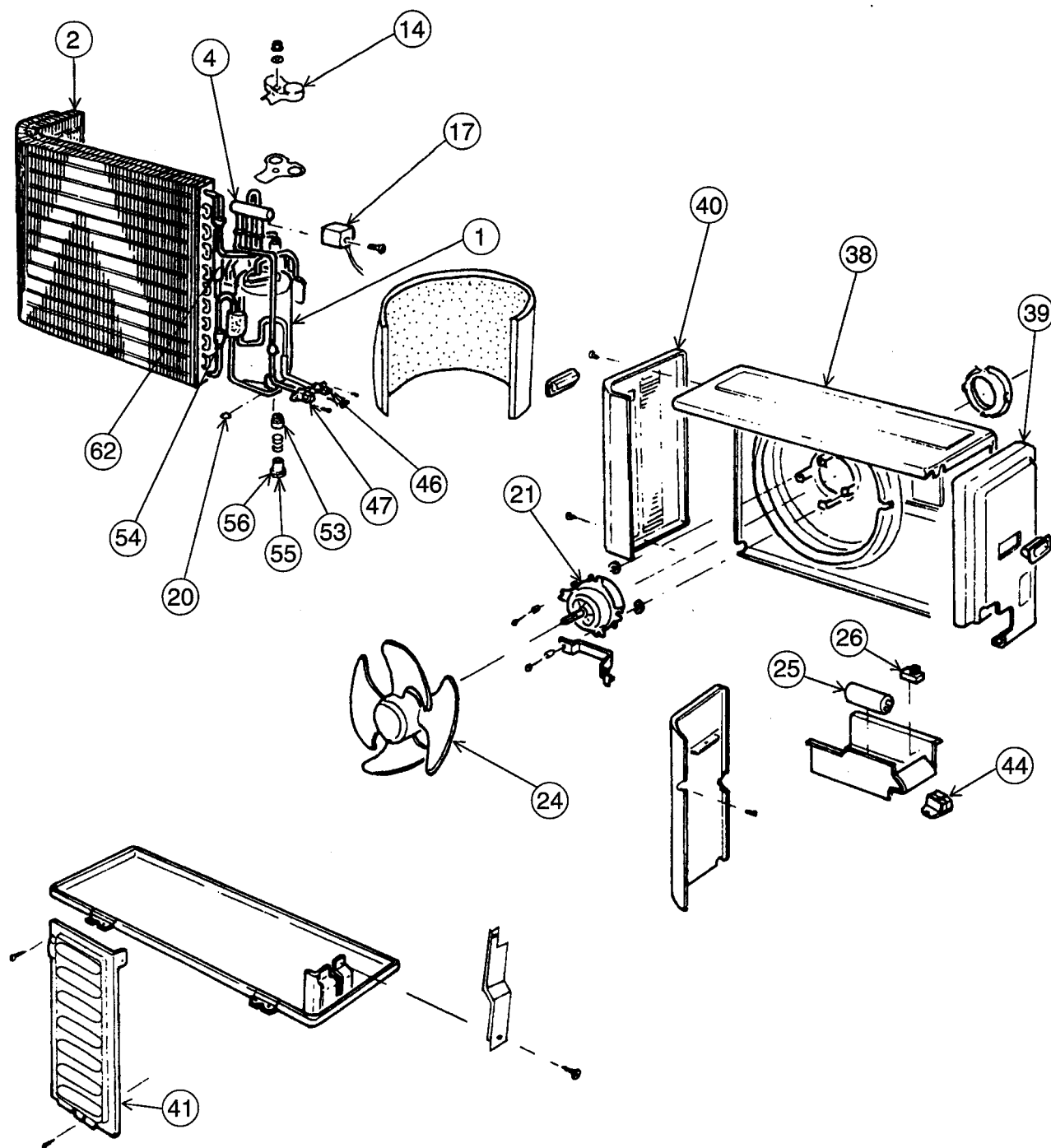
MODEL RAC-5142CHV



MODEL RAC-5142CHV

NO.	PART NO. RAC-5142CHV	Q'TY/UNIT	PARTS NAME
1	PMRAC-5142CHV 902	1	COMPRESSOR 1100W, 17KG
2	PMRAC-5142CV 902	1	CONDENSER
4	RAC-128JHT 905	1	REVERSING VALVE
12	RAC-5202CVP 911	1	OVERHEAT RELAY
14	PMRA-3146B 904	1	O.L.R. COVER
17	RAC-3188CH 906	1	MG-COIL (REVERSING VALVE)
20	KPNT1 001	6	PUSH NUT
21	PMRAC-5142CV 905	1	FAN MOTOR 20W/3KG
24	RAC-2558HV 005	1	PROPELLER FAN
25	C180C 908	1	CAPACITOR 35 μ F, 440V
26	RAC-220BHV 003	1	CAPACITOR 2.5 μ F, 400V
38	PMRAC-5142CV 906	1	CABINET
39	PMRAC-5142CV 907	1	SIDE PLATE (L)
40	PMRAC-5142CV 908	1	SIDE PLATE (R)
41	PMRAC-5142CV 909	1	BACK PLATE
44	PMRAS-07C1 006	1	TERMINAL BOARD (2P)
46	PMRAC-5142CV 910	1	VALVE (2S)
47	PMRAC-5142CV 911	1	VALVE (4S)
53	PMRA-3146B 907	3	COMPRESSOR RUBBER UPPER
54	PMRAC-5142CV 913	1	STRAINER
55	PMRAC-3093K 901	3	COMPRESSOR RUBBER LOWER
56	PMRA-3146B 905	2	COMPRESSOR SPRING
56	PMRA-3146B 906	1	COMPRESSOR SPRING
57	PMRAC-5142CHV 901	1	OVERLOAD RELAY
62	PMRAC-5182CHV 012	1	CHECK VALVE

MODEL RAC-5142CHV1 / RAC-5142CHA1



MODEL RAC-5142CHV1 / RAC-5142CHA1

[illegible]